ANNUAL REPORT OF THE CANAL COMMISSIONERS OF PENNSYLVANIA,

Made to the Governor, December 2, 1834.

PRINTED BY ORDER OF THE SENATE.

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CANAL COMMISSIONERS' REPORT.

CANAL COMMISSIONERS' ROOM,
December 2, 1834.

His Excellency George Wolf,
Governor of Pennsylvania.

Sir—By order of the board of Canal Commissioners, I have the honor of transmitting to you their annual report, for the year ending the first of November last, and accompanying documents.

JAMES CLARKE, *President.*

The Canal Commissioners respectfully submit their Annual Report:

On the fourth day of July, one thousand eight hundred and twenty six, a little more than eight years ago, the State of Pennsylvania commenced her great system of internal improvements by breaking ground on the canal, near her capitol at Harrisburg, and notwithstanding the formidable difficulties and embarrassments incident to the prosecution of a work, which, for extent, magnitude and utility, stands unrivalled in modern times, the Canal Commissioners have the satisfaction of announcing to their fellow-citizens, that all the lines of canal and rail-way authorized by law, are so far completed as to admit of transportation throughout their whole extent.

Although the canals and rail-ways are now in a condition to accommodate the present trade, there is yet some work under contract and in progress on several of the lines requiring to be finished to render them complete. The most important work remaining unfinished, is the second track on the Portage rail-way; this, however, is progressing with such rapidity as to ensure its completion before the opening of the canal next spring.

The navigation on the Susquehanna and the North and West Branch divisions remained open until about the 12th of December last. On the Juniata and Western divisions until about the 20th, and on the Eastern and Delaware divisions, until the 1st of January. But as the Union canal closed about the middle of December, little or no business was done after that period on the Pennsylvania canal, west of Portsmouth.

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The several lines of canal opened for transportation in the following order:

The Delaware division,	60 miles,	1st March, 1834.
Eastern do.	45 "	1st " "
Juniata, from Duncan's Island to Aughwick,	69 "	1st " "
Western division, from the head of the pool of dam No. 1, to Pittsburg,	41 "	4th " "
Juniata division, from Aughwick to Frankstown,	56 "	6th " "
Western division, from Johnstown to the pool of dam No. 1,	63 "	10th " "
Susquehanna & West Branch divisions,	65 "	10th " "
Juniata division from Frankstown to Hollidaysburg,	2 "	12th " "
North Branch division,	59 "	23d " "
French creek division,	22 "	30th " "
Beaver division,	24 "	28th May "
Wyoming line,	13 "	4th July, "

And the rail-ways were opened and in use as follows:

Columbia line, from the head of the Schuylkill inclined plane to the intersection of the West Chester rail-way, eighteen miles of double track, in use throughout the year.

Do. do. from the head of the plane to the intersection of Vine and Broad streets in the city of Philadelphia, four miles of double track, opened on the 25th day of December last, and has been in use since.

Portage, whole distance, thirty-six miles of single track, opened on the 18th of March.

And an entire line of communication through the Schuylkill and Union canals and the Pennsylvania improvements, has been kept up between Philadelphia and Pittsburg since that time.

Columbia line, from the intersection of the West Chester rail-way to the borough of Columbia, sixty miles of single track, in use from April 16th.

Do. do. same distance, second track, in use from October 7th.

It will be seen by the foregoing, that the main line of canal was open between the 1st and 12th of March, and that a single track on the Portage rail-way was opened for public use on the 18th; but as those engaged in the transportation were not prepared to take advantage of the first opening of the line, in the early part of the season an immense amount of merchandize, destined for the west, accumulated in the warehouses at Philadelphia, Harrisburg and Hollidaysburg, and was prevented from reaching Pittsburg in due time, owing principally to the want of the requisite number of cars on the Portage and boats on the Western division. The delays thus produced, proved a source of disappointment and vexation to the merchants, which, together with the lack of correct information on the part of persons at a distance, respecting the facilities afforded by the new improvements, as well as a want of confidence of others in their stability, occasioned much of the spring trade that ought to have been carried on the Pennsylvania lines, to seek other channels.

A portion of the trade being thus diverted, and in the mean time the transporters having obtained a supply of boats and cars which enabled them to carry all the freight that offered, merchandize at one time was carried from Philadelphia to Pittsburg in eight days, for one dollar, per hundred pounds; and while the Ohio river continued in good navigable order, it was transported from Philadelphia to Cincinnati in twelve days, for one dollar and thirty cents, per one hundred pounds. Cotton was carried from the State of Tennessee to Philadelphia, on the Ohio river and Pennsylvania canals, for one dollar twelve and a half cents, per one hundred pounds. Flour also was transported from Pittsburg to Philadelphia, for one dollar twelve and a half cents per barrel. The transportation of western produce was brisk in the spring, but limited the rest of the season, owing to a long continued drought in the west, which prevented steam boats plying on the Ohio from reaching Pittsburg; consequently, the transporters upon the Pennsylvania improvements were unable, for several months, to obtain full cargoes on their eastern bound voyages. This fact demonstrates the propriety of an appropriation by Congress, (Pittsburg being a port of entry,) for the improvement of the navigation of the river Ohio.

Besides the causes which have already been assigned as tending to retard the trade on the public canals and rail-ways, and diminish the amount anticipated, the derangement of the monied concerns of the United States last winter and spring, had a serious effect. Merchants and traders acted with extreme caution, and limited their business within a compass dictated by prudence.

The old part of the Nanticoke dam was carried away last spring. By the erection of a coffer dam, the navigation was kept up, subject to occasional interruptions, until the completion of the new dam.

A few breaches in the banks on some of the lines have occurred during the season, principally from defects in the original construction of the canal; but in most instances, they were of small extent, and always promptly repaired. The Eastern division, between Portsmouth and Columbia, was not in use for about five or six weeks, for want of a sufficient supply of water. A like occurrence, from the same cause, cannot in future take place, as a feeder from the Swatara creek, to supply the deficiency, is now in a course of construction. On the Eastern and Susquehanna divisions there was a deficiency of water for boats with heavy loads for a few days, and on the Western division the same thing took place occasionally; with these exceptions, the canal has been kept in excellent condition, so that there has been but little interruption of the trade during this season. It is especially a gratifiing fact, that throughout the whole extent of the main line, west of the Union canal, from the time it was filled with water in the spring, no serious accident has occurred to interrupt the navigation, or mar the arrangements and prospects of those engaged in transportation.

Innumerable and disheartening difficulties presented themselves in the progress of the public improvements. But by the devoted zeal and untiring perseverance of the agents employed by the board in the construction and care of the several lines, as well as from the steady support which the system has received from enlightened public opinion, those formidable obstacles have not only been encountered, but successfully overcome; and the period has arrived, when the Canal Commissioners can say to their fellow-citizens of this Commonwealth—"*The six hundred miles of canal and one hundred and twenty miles of rail-road which you directed us to have constructed, are now ready for use.*" Nor have these great works been constructed in vain. The trade upon them during the present season has been auspicious, and cannot fail to be highly gratifying to every Pennsylvanian who feels a laudable pride in the growing prosperity of his own State.

The amount of toll collected and paid into the State Treasury within the fiscal year ending on the 31st of October, 1834, is	$ 309 789 15
To which should be added the toll received by collectors subsequently to their last remittance, but which did not reach the Treasury until after the accounts of the year were closed by that department,	13,745 93
Whole amount of toll collected within the year,*	$323,535 08

That the public may have a standard of comparison between the progressive increase in the tolls derived from the public works of Pennsylvania, and the tolls received on the New-York canals, whereby an estimate can be made of the probable amount which may reasonably be expected hereafter, the following table is inserted.

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* From the first to the twenty-ninth November of the present fiscal year, the collectors on the Pennsylvania improvements have received $42,329 42.

Which added to the amount in the annexed table, makes the sum received in the first five years,	$633,447 86
The amount received the first five years on the New-York canals, (their reports are closed on the 1st January,) is	$577 617 61
Balance for the first five years in favor of the Pennsylvania improvements,	$ 55,830 25

To which should be added, to make the comparison complete, the amount of tolls which will be collected in Pennsylvania in the month of December.

Comparative statement of toll received on the New York and Pennsylvania improvements.

Pennsylvania,		*New York.*	
Years.	Amount.	Years.	Amount.
1830,	27,012 90	1820,	5,437 34
1831,	38,241 20	1821,	14,388 47
1832,	50,909 57	1822,	64,072 40
1833,	151,419 69	1823,	152,958 33
1834,	323,535 08	1824,	340,761 07
		1825,	566,112 97
		1826,	762,003 60
		1827,	859,058 48
		1828,	838,444 65
		1829,	813,137 45
		1830,	1,056,922 12
		1831,	1,223,801 98
		1832,	1,229,483 47
		1833,	1,463,715 22

It may be proper here to remark that New York began on the easiest made portions of her canals and finished them progressively, hence her improvements became more immediately productive in proportion to the expenditure, than those of Pennsylvania, as the improvements of the latter were commenced in detached sections, unconnected with each other, which prevented the parts first finished from becoming useful or productive until the completion of the intermediate portions.

Last year, New York had about five hundred miles of canal in use, on which she took toll to the amount of one million, four hundred and sixty-three thousand seven hundred and fifteen dollars and twenty-two cents, equal to two thousand, nine hundred and twenty-seven dollars and forty-three cents per mile. At this rate the seven hundred and twenty miles of canal and rail-way, belonging to this State, will, in a few years, yield two million, one hundred and seven thousand, seven hundred and forty-nine dollars and sixty cents per annum, which sum there is every reason to believe will be realized in less time than it has taken our sister state to arrive at the amount of tolls received by her, last year.

The opinion of the board, as to this favorable result, is founded upon the following facts:

1st. The canals in Pennsylvania can be navigated five weeks earlier in the spring, and three weeks later in the fall than, those of New York, and the Columbia rail-way can be used throughout the year.

2d. The central and commercial position which Pennsylvania occupies in the Union.

3d. The command she has of the Ohio river, the great channel of communication with the empire of the West. And

4th. The advantages she will have over New York, in tonnage arising from her inexhaustible beds of *coal* and mines of *iron.*

The following table shews the number of boats cleared and the distance travelled by passengers on the public improvements for the last three years:

Years.	No. of boats cleared.	No. ofmiles travelled by passengers.
1832	5,000	152,788
1833	12,529	878,315
1834	18,797	4,085,191

There have been six hundred and sixty-four boats on the canal and three hundred and forty-nine cars on the rail-way, regularly registered, of which one hundred and two cars are on the Columbia rail-way and two hundred and forty-seven cars on the Portage. Imposing as this number of boats and cars may appear, they are not sufficient for the trade expected to be done next year. But to meet the increasing trade, the transporters now engaged in the carrying business, are making preparations to double their present means of conveyance. Besides, there will be added several new lines of packet and freight boats, which are now constructing. With a knowledge of these facts, there can be no hazard in concluding that the tolls of 1835, will more than double the amount received in 1834.

For the purpose of securing to the community the longest period of navigation, orders have been issued to the supervisors to keep the canal open, and if practicable, prevent its passage from being interrupted by ice until the first of January. They have also been directed to put their respective lines in the best possible order; have them filled with water and ready for the spring trade by the first of March. In ordinary seasons this can be accomplished.

COLUMBIA RAIL-WAY.

In conformity with the act of the 21st of March, 1831, the city of Philadelphia has constructed four tracks of rails from the termination of the Columbia rail-way at the intersection of Vine and Broad streets, along the latter street to Cedar street. From this point a company has laid a single track of rails along Broad to Prime street, and thence down Prime and Washington streets through Southwark to the Delaware river, near the navy yard. Another rail-road has also been constructed by a company from the Schuylkill near Fairmount, through Penn township and the Northern Liberties to the Delaware, intersecting and crossing the Columbia rail-way near its termination. Thus, for practical purposes, the great chain of improvements may be said to commence at two points on the Delaware river, north and south of the limits of the city, but within the range of a dense population and an active business. At either place the cargoes of sea vessels may be transferred immediately into rail-road cars, or the contents of the cars into vessels, without any expense for drayage.

Starting from the Delaware and pursuing our course westwardly, on the rail-way three miles west fo the city, we reach the viaduct and road bridge across the Schuylkill. It is one thousand and eight feet in length, and was first opened for public use on the 25th day of December, 1833. Immediately west of the viaduct the Schuylkill inclined plane presents itself. It is two thousand eight hundred and five feet in length, with a rise of one hundred and eighty-seven feet. Cars are drawn up and let down upon it by a stationary steam engine of sixty horse power placed at the head of the plane. A lot of ground adjoining the building containing the stationary engine, has been purchased and there are now erecting on it an engine house for locomotives, machine shops and other buildings and fixtures necessary for the preservation and repair of engines belonging to the Commonwealth.

About twenty-two miles west of the city, the West Chester rail-road, nine miles long, commences and diverges to the south west, and six miles further west a branch of the same rail-road is united to the Columbia rail-way, from whence it diverges and runs a southeasterly course.

The Columbia inclined plane, near the borough of Columbia, in Lancaster county, is one thousand eight hundred feet in length, with an altitude of ninety feet. At its summit there is also a stationary engine of forty horse power. Suitable buildings, near the head of the plane, for locomotive engines, machine shops, &c., are now in progress and will soon be finished.

From the west end of the twenty-two miles next Philadelphia to Columbia, being sixty miles long, a single track of rail-way was opened for public use on the 16th day of April last, and the second track was also opened on the 7th day of October.

In compliance with the act of the 26th of March, 1833, the canal commissioners caused to be placed under contract the work necessary to form a connection between the main track of the Columbia rail-way and the Columbia Bridge. This work is in progress and nearly finished, and when the bridge company shall have laid rails on the bridge in conformity with the provisions of the said act, the connection between the main track at Columbia and Wrightsville in York county will be complete.

Immediately after the passage of the act of the 15th day of April last, authorising the canal commissioners to place locomotive engines on the rail-way, directions were given to the superintendent to procure if possible fifteen, for the use of the Columbia rail-way. Two have been purchased and placed on the road, they perform well. The remaining thirteen have been engaged, ten of which will be placed upon the road by the first day of March next, and the other three by the first day of June.

From the present prospect of a large increase of business on the Pennsylvania improvements, the board believe it will require from twenty to twenty-five engines to accommodate the trade and travelling next season, and that this number must be increased annually for several years to come. That a greater number has not been contracted for since the passage of the act than is now engaged, was owing to the difficulty of procuring them in this country, and the want of funds. The cost of those purchased is thrown upon the general appropriation for finishing and furnishing the road to make it useful.

Sideways, scales for weighing cars and their loading, collectors offices and water stations have been constructed, or are in a course of construction at necessary and convenient points along the road. A few more will be required to render the means of transportation complete.

CANAL—MAIN LINE.

Since our last annual report, the out-let locks at Columbia, between the canal basin and the Susquehanna, have been finished. A collectors office at that place is now building—one end of the public basin wharfed, and this winter a wharf will be constructed the whole length of the basin on the side next the river.

A feeder dam nine and a half feet high, and three hundred feet long was built this summer in the Swatara creek at Portsmouth, from whence a feeder for the canal of two miles and a quarter in length is now in progress and will be ready for use by the 1st day of March next.

The eastern span of the bridge over the Susquehanna at Clarks ferry had settled so much as to render it necessary to build a new pier in the centre of the span. This was done and the bridge is now considered entirely secure.

In the original construction of the canal two dams were built in the Juniata river at Norths island, which in common with all other dams erected on the public works at the commencement of the system, proved defective. A new dam was built on the north side of the island last year, a like improvement is required on the south side, and it will be made as soon as practicable.

When the rope ferry above North's island was constructed, only one pier was built in the river to support the rope. This proved insufficient; and to remedy the defect, two additional piers were built by the supervisor.

The dam in the Juniata, at the head of the Long Narrows, had settled so much as to render it necessary to raise and strengthen it by the erection of a new breast or structure of crib work below it. This was accordingly done, by which the dam is effectually secured. A narrow gorge, for several miles below this dam, causes the river to raise so high during freshets, as to burst the banks of the canal. To prevent occurrences of this kind hereafter, it will be necessary to construct a guard lock about two miles below the dam. Preparations are making to put two new spans in the aqueduct at Shaeffer's ford, and which will be done during the coming winter.

It became necessary to erect a new dam in the Juniata, on the south side of an island in the river, at the mouth of the Raystown branch, in lieu of the old one, which had become much impaired and was likely to fail. The work is now finished.

With a view of rendering the public improvements permanently secure, as well as to guard against accidents where any danger is apprehended, the board have caused the abutments, guard banks and heads of guard locks, at all the dams on the Frankstown line, to be raised and strengthened. There are two lift locks on this line requiring repair, which will be done this winter.

PORTAGE RAIL-WAY.

The first track of the Portage rail-way was completed and opened for public use on the 18th of March last. The stationary engines and other machinery at the inclined planes, work well, and fully answer the purposes for which they were designed. Contracts are made for ten other engines: they are now constructing, and when finished, will be placed during the winter along side of those already in operation. These additional engines are intended to supply the place of the present ones in case of accidents, and to accommodate the business as it increases on the road.

Immediately after the passage of the act making an appropriation for laying the second track on the mountain, orders were forwarded to England for seventeen hundred and ninety-three and a half tons of rails. These orders were filled at one manufactory in Wales, in twelve weeks, and by the last advices the iron had all been shipped. Of sixteen thousand nine hundred and fifty bars of edge rails, eighteen feet long, contracted to be delivered, fourteen thousand five hundred and eighty-six were received at Philadelphia previous to the report of the superintendent, on the thirty-first of October. As soon as the iron arrives at the city, it is transported to the Portage. The chairs, pins, and wedges, about seven hundred tons, are manufactured in our own State.

Contracts were entered into, as soon as possible after the passage of the law making an appropriation for procuring the materials and doing all the necessary work to complete the road, and the work has been prosecuted with so much spirit as to insure its completion by the time the navigation opens in the spring, unless a failure should take place in the delivery of the balance of the rails, which is not apprehended.

Ground has been purchased at Hollidaysburg and at Johnstown, and contracts entered into for erecting thereon suitable buildings and machinery for the preservation and repair of locomotive engines belonging to the Commonwealth. This work is now in progress. A rigger's loft for the ropes of the inclined planes, is built on the summit of the mountain where the rail-way crosses the turnpike road—at this point, smiths' and carpenters' shops will also be built as soon as practicable, for repairing the stationary engines, machinery, &c.

At each end of the Portage, weighing scales and houses for weighmasters are erecting, and are now nearly finished. Preparations are also making to construct two additional tracks along the basins at Hollidaysburg and Johnstown.

The inclined planes on the Portage cover about five miles of the road, and the levels, eleven in number, cover about thirty-one miles.

The level next to Hollidaysburg, and the two next to Johnstown, make an aggregate distance of twenty-two miles—on these three levels, locomotive engines can be used advantageously—the other eight levels, comprising about nine miles in length, must be worked with horses.

Upon being vested with the requisite authority by the Legislature, the board directed the superintendent to procure five locomotive engines, three of which have been engaged and it is expected will soon be delivered and placed upon the levels next to Johnstown; but an active trade will require more than double the number ordered.

Before quitting the subject of the rail-ways, the Canal Commissioners take occasion to remark, that the experience of the past season has convinced them that these roads, either as regards revenue, facilities to trade, or general accommodation, will not answer public expectation if thrown open like highways, to be used indiscriminately. Every person who has paid the least attention to the transportation upon them, since they were opened must be convinced that an unrestrained and indiscriminate application of motive power is attended with dangers, delays and interruptions. Safety, regularity and punctuality, must first be secured, before those important links in our great chain of improvements can fully answer the purpose for which they were designed, and the board are decidedly of the opinion, that this desideratum is only to be obtained, by the Commonwealth furnishing all the motive power and directing its application.

The board would also respectfully refer the Legislature to the accompanying reports of the superintendents and engineers of the Columbia and Portage rail-roads, for the cost of stationary and locomotive engines, and the current expenses of motive power. The information contained in these reports in relation to all matters connected with the beneficial use of these works, is so clearly exhibited as to render it unnecessary,on the part of the board,to say anything more on the subject—except earnestly, but respectfully urging upon the Legislature, the necessity of making early provision to procure a sufficient number of locomotive engines to accommodate a rapidly increasing trade.

WESTERN DIVISION.

Although the navigation of this line was maintained throughout the past season, the board consider it their duty to apprize the Legislature, that in very dry times, there may not be a sufficiency of water in the Conemaugh river, to answer the demands of an active trade. To be prepared for an occurrence of this kind, a reservoir is deemed necessary, and the engineer of the line was directed to make an examination for a suitable site. There is no doubt entertained that by means of a reservoir, an ample supply of water can be collected and stored up to meet any emergency.

A weigh-lock and dwelling house for a weigh-master—dwelling house and office for the collector and a bridge over the canal between these buildings, are now constructing at Johnstown, and nearly completed.

During the past summer a dam was built in the Conemaugh river at Blairsville, immediately below and attached to the old part of the dam, which was considered unsafe. Two years ago, one hundred and fifty feet were added to the length of the dam; this has stood firm, presenting another proof that dams may be constructed in any of our rivers, with perfect safety, capable of resisting the highest freshets without being injured.

New dams have likewise been built in the Kiskiminetas river, below and connected with the old ones, at the *Big Falls*, and at dam No. 3 below Rumbaugh's ferry; about one hundred and twenty feet of the dam at the Big falls, were carried away by an ice flood, in the month of January last, but it was so far repaired by the 10th of March as to fill the canal with water.

A new breast of crib work has been added to the great dam at Leechburg, and, to prevent leakage, all the dams on the division, have been thoroughly gravelled.

Three new arches in the large aqueduct over the Allegheny river at the mouth of the Kiskiminetas, were put in during the suspension of the navigation last winter, in lieu of the old ones which had failed. Two new ones were also put in the Pittsburg aqueduct; but to render these works secure, several additional new arches are required. The timber for this purpose is all prepared, and the work will be finished the coming winter.

The out-let-lock into the river at Alleghenytown, failed last year. A large portion of it had to be taken down and rebuilt. All the work connected with this job is finished. One side of the out-let-lock into the Kiskiminetas, below Saltzburg, was also found to be defective. It likewise was taken down and rebuilt. Many of the locks on this division require repairing, and the heads of some of them must be taken down and reconstructed.

New cylindrical sewers of brick work, five feet in diameter, are constructing on each side of Grant's hill, in the city of Pittsburg, for the purpose of conveying away the wash, which descends from the hills, and preventing it from running into the canal as heretofore. One million ninety-six thousand nine hundred and ten bricks will be required for this job. The sewer leading into the Monongahela is one thousand seven hundred feet long, and was nearly finished on the 31st of October. The other two thousand seven hundred feet long, which empties into the Allegheny river, is so far advanced as to render the completion of the work required this fall, highly probable.

BEAVER AND FRENCH CREEK DIVISIONS.

Having in former reports given detailed descriptions of the public improvements, and their situation with the length of the rail-roads, canals, slack water and feeders; the number of dams, aqueducts and locks, with the amount of lockage on each line, the board think a repetition of the same facts, in the present report, unnecessary. In relation then to the Beaver and French creek divisions, they have only to remark, that, with the exception of a few unimportant jobs, these divisions containing seventy-six miles of isolated canal are completed, and in good navigable order.

SUSQUEHANNA LINES.

No new work of any consequence was required within the last year on the Susquehanna division, or the Muncy line of the West Branch division, except a weigh-lock at Northumberland, which is nearly finished.

In 1832 a portion of the Nanticoke dam on the North Branch, was carried away by a freshet, and it was substantially re-built during that season; the remaining part of the dam having failed last spring, was replaced by a new structure built the past season.

New safety gates have been erected upon the same line opposite to Catawissa and at Santee's, for the purpose of protecting the canal against the effects of floods which on the North Branch of the Susquehanna, rise to a great height.

The locks upon the old line of the North Branch division, eight in number, are built entirely of timber, and are the only locks of the kind on the public improvements of the State. They are decaying, and must all be re-constructed within a short period. The sound policy of re-placing them with substantial stone locks is evident, and for which preparations should be made next summer. It may not be considered inappropriate at this place to remark, that the use of a material so perishable as timber should, as far as consistent with true economy, be avoided on the canals and rail-roads of the State.

The towing path along the pool of the Nanticoke dam is wearing away by the action of the water in the river. Extensive protection wall or rip rap is required for its preservation.

That portion of the Wyoming line, which was unfinished at the date of our last report, was completed and opened for public use on the fourth of last July, and it stood the introduction of the water as well as any new line in the State. But the satisfaction derived by the Board from that circumstance was considerably abated, upon ascertaining that the sum required to pay the final estimates made by the engineer in accordance with the prices and provisions of the contracts, would much exceed the amount estimated by him last year as necessary to complete the line. That officer's services having been dispensed with in July last, he left the line without explaining the cause of the excess over his estimate for completion.

The Lycoming line of the West Branch division, including the Lewisburg and Bald Eagle side cuts, is also finished, filled with water and in public use.

It is a fact worthy of notice, as connected with the progress of the public improvements of Pennsylvania, that on the one hundred and seventy-four miles of canal and feeder constructed since the passage of the act of 1831, only two or three failures occurred. Every description of work has proved to be of the most substantial character, and has fully demonstrated that newly constructed canals can be made capable, as soon as finished, of withstanding all the casualties to which from their location they are liable.

DELAWARE DIVISION.

Respecting this valuable division of the public works, the Board have little to communicate. It was opened for trade on the first of March, and has continued in good navigable order throughout the season. Some difficulty still exists in supplying the levels of the canal below New Hope with water. But it is hoped that the pending negociation with the State of New Jersey, for the mutual use of water from the Delaware, will terminate in an arrangement satisfactory to both States, and remove all future difficulties.

The only work of importance done on this line since last year, is a new breast to the old dam on the river Lehigh at Easton. The precarious condition of the old dam rendered an additional structure necessary. It is now entirely secure.

Many of the bridges on this line are in a ruinous condition; and as no provision is made by law for the re-construction or repair of bridges over the canal, the Board respectfully ask the Legislature to give the subject their early consideration.

In the discharge of the duties devolving on the Canal Commissioners, it has always been to them a source of regret and vexation to find themselves compelled annually to ask for larger appropriations than was contemplated in the estimates of the previous year. But in the construction of such extensive and difficult improvements as the canals and rail-roads of Pennsylvania, carried as they have been along and over broad, deep and rapid rivers, through rugged defiles and over lofty mountains, it was impossible to foresee and calculate the innumerable contingencies to which such works are liable. Besides, the most experienced and skilful engineers could not anticipate or estimate the sums that might be required by subsequent legislation, or by the orders of the Canal Board, issued to meet emergencies, repair damages and perfect the system.

To illustrate the foregoing remarks, it is only necessary to observe that at the last session of the Legislature an act was passed authorizing locomotive engines to be procured for the rail-roads, without any specific provision being then made to pay for them, or to pay for the expense of keeping them and the stationary engines in use. Hence the construction fund had to sustain the out-lay upon these objects, as well as the collateral cost of depots, engine houses, machine shops, water stations, &c. &c., and consequently there is on these accounts a deficiency in the appropriations.

PORTAGE RAIL-WAY.

Amount applicable of appropriations made prior to the 1st November, 1833,	$1,214,793 06
Appropriation of the 5th April, 1834,	365,900 00
Amount,	1,580,693 06

Expended prior to 1st November, 1833,	$1,041,121 55	
Do. year ending 1st Nov. 1834,	403,587 84	
		1,444,709 39
Balance on hand,		$135,983 67
Sum required to complete the rail-way,		$282,574 85
Deduct the above balance,		135,983 67
Leaving a balance to be provided, of		$146,591 18

COLUMBIA RAIL-WAY.

Amount applicable of appropriations made prior to the 1st November, 1833,		$2,402,100 36
Appropriation of the 5th April, 1834,		804,900 00
Amount,		3,207,000 36
Expended prior to 1st Nov. 1833,	$1,700,798 99	
Do. year ending 1st Nov. 1834,	1,499,756 58	
		3,200,555 57
Balance,		$6,444 79
Sum required to complete the rail-way,		$117,020 00
Deduct the above balance,		6,444 79
Leaving a balance to be provided, of		$110,575 21

LYCOMING LINE.

Amount applicable of appropriations made prior to the 1st November, 1833,		$857,431 76
Appropriation of the 5th April, 1834,		301,200 00
Amount,		1,158,631 76
Expended prior to 1st Nov. 1833,	$706,008 47	
Do. year ending 1st Nov. 1834,	442,200 86	
		1,148,209 33
Balance on hand,		$10,422 43
Sum required to complete the line,		$57,364 44
Deduct the above balance,		10,422 43
Leaving a balance to be provided, of		$46,942 01

WYOMING LINE.

Amount applicable of appropriations made prior to 1st November, 1833,		$284,892 85
Appropriation of the 5th April, 1834,		17,400 00
Amount,		302,292 85
Expended prior to 1st Nov. 1833,	$227,555 00	
Do. year ending 1st Nov. 1834,	74,567 25	
		302,122 25
Balance on hand,		$170 60

Sum required to complete the line,	$40,674 30
Deduct the above balance,	170 60
Leaving a balance to be provided of	$40,503 70

FRENCH CREEK DIVISION.

Amount applicable of appropriations made prior to the 1st November, 1833,		$ 348,160 29
Appropriation of the 5th April, 1834,		94 400 00
Amount,		442,560 29
Expended prior to 1st Nov. 1833,	302,783 93	
do. year ending 1st Nov. 1834,	123,508 48	
		426,292 41
		16,267 88
Sum required to complete division,		15,163 04
Balance on hand,		$ 1,104 84

BEAVER DIVISION.

Amount applicable of appropriations made prior to the 1st November, 1833,		$ 424,241 62
Appropriation of the 5th April, 1834,		57,100 00
Amount,		481,341 62
Expended prior to the 1st Nov. 1833,	384,213 57	
do. year ending 1st Nov. 1834,	85,598 91	
		469,812 48
		$ 11,529 14
Amount required to complete,		6,589 00
Balance on hand,		4,940 14

A statement of the sums drawn from the Treasury in the year ending the 31st October, 1834, out of the fund appropriated for new work upon old lines:

Pay of the Canal Commissioners, their secretary and office expenses, on account of the yearending the 1st Monday of June last,	$5,443 47
Do. on account of the present year,	3,000 00
Appraisers of damages,	90 00
Delaware division,	20,000 00
Eastern division,	12,000 00
Juniata division,	18,000 00
Western division,	31,000 00
North Branch and Susquehanna divisions,	4,801 70
West Branch division,	2,000 00
French Creek feeder,	1,200 00
	$97,535 17

The details of the above expenditures upon the divisions appear in the reports and tables of the several superintendents accompanying this report.

Statement of the sums drawn from the Treasury for repairs of the canal and rail-ways in the year ending the 31st October 1834.

Columbia rail-way,	82 Miles,	$ 5,000 00
Eastern division and lower 13 miles of the Juniata division,	58,	21,730 44
Juniata division upper part,	119,	36,139 65
Portage rail-way,	36¾,	10,481 56
Western division,	106½,	87,070 22
French creek feeder,	19½,	17,328 66
Susquehanna division	39,	43,241 18
West branch division,	26½	28,535 57
North branch division,	64,	57,009 78
Delaware division,	59¾,	51,933 90
Whole amount drawn,		$ 358,470 96
Amount paid for repairs due on the 1st Nov. 1834 as appears from the last report,		64,298 58
		294,172 38
To which add the sums due by supervisors, over and above the balances in their hands,		23,465 22
		317,637 60
Of this sum there has been expended for rebuilding and repairing dams,		113,783 12
Current repairs on 611 miles of canal and rail-way,		$ 203,854 48

The expenditure upon dams rebuilt and repaired the past season ought not to be classed with current repairs, inasmuch as when they were erected the method of constructing dams permanently had not been acquired. The actual sum therefore expended in the ordinary and current repairs for the last year is, as above stated only two hundred and three thousand eight hundred and fifty-four dollars and forty-eight cents.

A statement of the sums drawn from the treasury, for damages upon the canal and rail-ways in the year ending the 31st October, 1834.

Columbia rail-way,	$570 00
Eastern division,	21,500 00
Juniata division,	10,000 00
Western division and Portage rail-way,	15,000 00
Susquehanna and North Branch divisions,	1,900 00
West Branch division,	5,385 00
Delaware division,	1,100 00
Whole amount drawn,	$ 55,455 00

Statement of the sums required to finish the work under contract:

Upon the Portage rail-way,	$146,591 18
Upon the Columbia rail-way,	110,575 21
Upon the Lycoming line,	46,942 00
Upon the Wyoming line,	40,503 70
	$ 344,612 09

There will be required to pay contracts chargeable upon the fund for new work upon old lines, such as the completion of the Swatara feeder, the weigh locks and houses for collectors and weigh-masters, and also to purchase and improve lock house lots, to build fences, to commence a reservoir near Johnstown, and for the pay of the canal commissioners their secretary and office expenses, appraisers, superintendents and resident engineers, chargeable upon this fund the sum of $125,000 00

There will be required for repairs of the canal and rail-way the ensuing year. $ 200,000 00

To pay damages 30,000 00

There will be required for purchasing locomotive engines the present year,

For the Columbia railway	18	engines,	$113,400 00
For the Portage	5	do.	31,500 00

The above estimate includes the cost of completing the rail-way and furnishing a supply of locomotive engines for the coming year; but it does not embrace the expenses of maintaining the stationary and locomotive engines while in use: nor of repairing or replacing them when necessary. It is contemplated by the board to charge the trade and travel upon the rail-ways, whatever way be the actual cost of the motive power furnished by the state, and no more. But as this money must be transmitted to the state treasury along with the tolls, and cannot be drawn therefrom and applied to defraying the expenses of the motive power. And as these expenses will be immediate and pressing, the board respectfully ask the Legislature to pass a law authorising the appropriation of the money thus arising, to the proper object; and also to provide by a special appropriation a fund of about forty or fifty thousand dollars to commence and maintain the motive power on the rail-ways until the money arising from that source can be made available.

A number of private claims were submitted to the board by acts and resolutions of the Legislature, passed at the last session. These, so far as they have been presented, have been severally decided.

Signed by order of the Board,

JAMES CLARKE, *President.*

FRS. R. SHUNK, Secretary.

Harrisburg, December 2, 1834.

Statement *of the Property cleared at the several offices upon the Penn. Canal & Rail-way during the year ending the* 31*st Oct.* 1834.

COLLECTORS' OFFICES.	Flour.	Wheat.	Rye, Corn, &c	Grass Seeds.	Potatoes.	Beef & Pork.	Fish.	Butter, Cheese
	Barrels.	Bushels.	Bushels.	Bushels.	Bushels.	Barrels.	Barrels.	Pounds.
Philadelphia,	7	-	-	15	175	7	1069	129638
Columbia,	154	226	1334	-	-	-	75	
Portsmouth,	77	-	2702	-	-	228	15520	
Harrisburg,	-	-	-	-	-	185	1412	
Hollidaysburg,	15	-	1030	-	-	-	3193	802
Johnstown,	-	-	1980	-	-	-	3134	
Northumberland,	-	-	-	-	-	-	1067	
Bristol,	-	7151	1330	-	406	82	5516	24844
Agg. of the intermediate offic's,	761	498	3800	1130	130	22	7807	2151
North and West,	1014	7875	12176	1145	711	524	38793	157435
Pittsburg,	15199	-	4080	-	-	7821	492	57191
Johnstown,	6397	-	30774					
Hollidaysburg,	3993	-	875	210	6	770	-	26185
Northumberland,	7483	89833	14423	3918	1196	204	-	11244
Harrisburg,	6508	4044	6703	843	54	1155	-	27736
Portsmouth,	94	2774	579	31	85	-	263	
Columbia,	1661	124	107	-	-	-	-	1482
Easton,	40152	8888	43080	-	515	-	-	18289
Agg. of the intermediate offic's,	51335	87585	47145	7374	1600	478	23	264045
South and East,	132822	193248	147766	12376	3456	10428	778	507374
Total.	133,836	201,123	159,942	13,521	4,167	10,952	39,571	664,809

STATEMENT—CONTINUED.

COLLECTORS' OFFICES.	Lard & Tallow	Salt,	Provisions.	Wool.	Cotton.	Hemp.	Tobacco.	Leather, &c	Furs, &c.
	Pounds.	Bushels.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.
Philadelphia,	664	7416	475	3933	42236	270	22681	88171	3525
Columbia,	.	83	6733	.	.	.	1200		
Portsmouth,	.	41662	730	.	.	30608	.	775323	2027
Harrisburg,	.	1104							
Hollidaysburg,	.	.	.	.	.	14595	.	57992	
Johnstown,	.	.	.	.	.	2548	.	37931	
Northumberland,	.	9901	.	.	.	.	.	18064	
Bristol,	13606	36663	49565	.	35244	3471	161614	223583	1250
Agg. of the intermediate offic's,	.	277945	31008	540	665	450	10235	11046	
North and West,	14,270	374,774	88,511	4,473	78,145	51,942	195,730	1,212,050	6,802
Pittsburg,	69114	26155	187280	669408	60014	5548	2561345	58196	99499
Johnstown,	.	17653	1886133	637691	59482	.	2284679	20483	109160
Hollidaysburg,	54190	8156	1578812	665856	55599	3612	2388351	28800	21248
Northumberland,	4134		245571	.	.	.	663	48864	
Harrisburg,	41385	.	32027	401611	41594	1481	1381074	230536	69747
Portsmouth,	.	1006							
Columbia,	17502	.	3643	385	.	.	43485	32679	215
Easton,	1000	.	.	.	.	.	4680	93448	
Agg. of the intermediate offic's,	13183	298242	83996	37018	566	500	3145	225110	300
South and East,	200,508	351,212	4,017,462	2,411,969	217,255	11,141	8,667,422	738,116	300169
Total,	214,778	725,986	4,105,973	2,416,442	295,400	63,083	8,863,152	1,950,166	306971

STATEMENT—CONTINUED.

COLLECTORS' OFFICES.	Whiskey.	Domestic Spts	For. Liquor	Merchandize	Oil.	Gypsum.	Furniture.	Window Glass	Rags.
	Gallons.	Gallons.	Gallons.	Pounds.	Gallons.	Tons.	Pounds.	Boxes.	Pounds.
Philadelphia,	300	-	66377	1136661	5670	78	135041	259	12342
Columbia,	4016	-	-	33138	83		15684		
Portsmouth,	-	-	-	29101469	22950	5867	296809	75	
Harrisburg,	-	-	-	8446710	3182	150	271302		
Hollidaysburg,	150	-	34426	15005663	9659	24	155111		
Johnstown,	-	-	24618	14954425	8397	15	180524	-	2991
Northumberland,	-	-	33	961787	2503	651			
Bristol,	-	33401	40131	3330846	18484	2593	76103	482	5800
Agg. of the intermediate offic's.	6412	283	6586	2954740	3548	387	265361	220	2600
North and West.	10878	33684	172171	75,935,439	74476	9766	1395935	1036	23733
Pittsburg,	78047	-	2689	1052752	2233	-	123514	3212	179183
Johnstown,	28324	-	-	794630	30	-	78452	2455	118876
Hollidaysburg,	13007	-	240	311377	456	5	36311	2587	171934
Northumberland,	110500	1158	-	-	-	-	109462	1063	36299
Harrisburg,	17282	-	-	-	-	-	-	-	149467
Portsmouth,	970	-	-	50378	-	987	7839		
Columbia,	697	-	-	3398	31	-	8017	-	1115
Easton,	199093	-	-	5121	16335	-	77038	49	39496
Agg. of the intermediate offic's,	198540	1292	60	70504	667	14	124219	251	83926
South and East.	646460	2450	2989	2288160	19752	1006	564852	9617	780296
Total,	65,7338	36,134	175,160	78,223,599	94,228	10,772	1,960,787	10 653	804,029

STATEMENT—CONTINUED.

COLLECTORS' OFFICES.	Mineral Coal	Iron.	Lead.	Copper & Tin.	Marble.	Lime.	Limestone.	Slate for roofs.	Bricks.
	Tons.	Pounds.	Pounds.	Pounds.	Pounds.	Bushels.	Perches.	Pounds.	Thousand.
Philadelphia,	288	10247984	4165	19007	4716	-	-	–	51
Columbia,	-	553125	266	1595	-	250			
Portsmouth,	-	3196266	-	8960	233034	-	-	–	18
Harrisburg,	-		1429	3580	17299	3360	351	–	331
Hollidaysburg,	-	13718355	-	17487	-	533	-	–	19
Johnstown,	-	11190817							
Northumberland,	-	-	-	-	48832	-	-	–	7675
Bristol,	233	366016	1293	10509	106184	1182			
Agg. of the intermediate offic's,	1007	7040931	5557	15661	3335	117	-	–	9
North and West,	1,528	46,313,494	12,710	76,799	413,400	5,442	351		8,103
Pittsburg,	1139	4726841	26375	11555	-	-	-	–	374
Johnstown,	-	421170							
Hollidaysburg,	3800	87632	-	-	-	-	65	–	18
Northumberland,	3482	159227	-	100	-	940	-	–	12
Harrisburg,	4010	1201001							
Portsmouth,	1431	3237719	-	-	4480	-	-	–	3
Columbia,	-	386509							
Easton,	81390	916288	-	-	-	-	984	124648	
Agg. of the intermediate offic's,	8097	6545153	15	860	749528	36278	2073	–	206
South and East,	103,349	17,681,540	26,390	12,515	754,008	37,218	3,122	124,648	613
Total,	104,877	63,995,034	39,100	89,314	1,167,408	42,660	3,473	124,648	8,716

STATEMENT—CONTINTED

COLLECTORS' OFFICES.	Timber.	Saw'd lumber.	Staves, Heading & Hoop poles	Shingles.	Posts & Rails.	Wood for fuel.	Bark.	Sundries.
	Feet.	Feet.	Pounds.	Thousand.	Hundred.	Cords.	Cords.	Pounds.
Philadelphia,	12134	22144	- -	2	-	-	-	606641
Columbia,	3223	66753	- -	17	-	-	-	244188
Portsmouth,	-	124345	- -	43	-	-	-	977638
Harrisburg,	-	-	- -	-	-	-	-	1548401
Hollidaysburg,	-	-	- -	-	-	-	-	288857
Johnstown,	277	3800	- -	-	-	-	-	176972
Northumberland,								
Bristol,	31200	87701	81206	6	200	139	-	6994849
Agg. of the intermediate offic's,	9030	135296	395697	95	1067	324	-	1434426
North and West,	55864	440039	476903	157	1267	463		12271972
Pittsburg,	-	-	311530	-	-	-	-	2183804
Johnstown,	11086	7068	- -	-	-	-	-	1215523
Hollidaysburg,	36049	107164	- -	136	6038	1200	-	876112
Northumberland,	24435	281787	678685	566	4690	209	32	581943
Harrisburg,	24278	1300639	371763	436	2075	918	118	1026548
Portsmouth,	20598	125219	706156	30	890	-	124	95679
Columbia,	26822	586165	- -	262	-	-	-	30276
Easton,	-	400518	- -	107	-	-	-	26790197
Agg. of the intermediate offic's,	148013	1594883	594435	516	6722	280	319	11620277
South and East.	291281	4403443	2662569	2053	20415	2607	593	44420359
Total,	347145	4,843,482	3 139,472	2,210	21,682	3,070	593	56,692,331

A GENERAL STATEMENT,

Showing the amount of tolls received and number of boats cleared at the several collectors offices, and also the number of miles travelled by passengers upon the Pennsylvania canal and rail-way, during the year ending on the 31st of October, 1834.

	Tolls received.		No. boats cleared.	Passengers. M. travelled
Philadelphia,	$ 29,239	51		1,207,345
Paoli,	3,012	59		60,358
Downingtown,	490	36		740
Lancaster,	2,086	38		76,302
Columbia,	10,573	71	388	646,437
Portsmouth,	49,149	83	2,427	128,514
Harrisburg,	25,097	25	1,834	734,335
Newport,	1,959	07	300	4,300
Lewistown,	9,992	28	574	20,117
Huntingdon,	4,614	83	473	69,301
Hollidaysburg,	41,237	45	1,114	104,717
Johnstown,	40,749	81	2,265	62,936
Blairsville	5,595	72	359	138,599
Leechburg,	3,394	36	266	459
Pittsburg,	16,789	93	1,192	499,911
Beaver,	729	10	270	20,049
Franklin,	436	63		
Liverpool,	1,313	58	205	461
Northumberland,	11,966	44	1,000	287,930
Berwick,	2,203	73	304	692
Easton,	39,840	32	2,402	8,350
New Hope,	3,243	01	528	4,616
Bristol,	12,977	96	2,896	8,722
Columbia out-let-lock,	21	63		
Portsmouth out-let lock,	427	11		
do. Bridge Swatara,	707	94		
Bridge Duncan's Island,	3,453	30		
Aqueduct Duncan's Island,	68	69		
do. Shaver's ford,	9	06		
do. Jack's narrows,	58	00		
do. Kiskiminetas,	197	50		
do. Pitttsburg,	1,898	00		
	$323,535	08	18,767	4,085,191 miles

LIST OF DOCUMENTS

ACCOMPANYING THE REPORT OF

THE CANAL COMMISSIONERS.

COLUMBIA RAIL-WAY.

No. 1. Report of William B. Mitchell, superintendent.
2. Report of Edward F. Gay, engineer.

PORTAGE RAIL-WAY.

No. 3. Report of Samuel Jones, superintendent.
4. Report of Sylvester Welch, engineer.

EASTERN DIVISION.

No. 5. Report of John C. M'Allister, superintendent.
6. Report of Edward F. Gay, engineer, including his report upon the Susquehanna and Delaware Divisions.

JUNIATA DIVISION.

No. 7. Report of James K. Moorhead, superintendent.
8. Report of Sylvester Welch, engineer.

WESTERN DIVISION.

No. 9. Report of Samuel Jones, superintendent.
10. Report of Sylvester Welch, engineer.

BEAVER DIVISION.

No. 11. Report of John Dickey, late superintendent.
12. Report of Samuel Power, superintendent.
13. Report of C. T. Whippo, engineer.

FRENCH CREEK DIVISION.

No. 14. Report of John Anderson, superintendent.
15. Report of Alonzo Livermore, engineer.

WEST BRANCH DIVISION.

No. 16. Report of William F. Packer, superintendent.
17. Report of James D. Harris, engineer.
18. Report of Robert Faries, engineer.

NORTH BRANCH AND SUSQUEHANNA DIVISIONS.

No. 19. Report of Lord Butler, late superintendent.
20. Report of David M'Cormick, superintendent.
21. Report of Robert Faries, engineer.
For Report of E. F. Gay, engineer upon the Susquehanna division—See Eastern division.

DELAWARE DIVISION.

No. 22. Report of Simpson Torbert, superintendent.
For Report of E. F. Gay, engineer—See Eastern division.

Columbia and Philadelphia Rail-way.

No. 1.

Report of William B. Mitchell, Superintendent.

To James Clark, Esq.
President of the Board of Canal Commissioners.

Sir—At the date of my last annual report, it was considered merely possible to render the first track of the Columbia Rail-way passible by the first day of January last. The fears then entertained were unfortunately realized, and the want of sufficient quantity of iron, together with the unfavorable season of the year for prosecuting works of this kind, prevented the accomplishment of my wishes; and it was not until the sixteenth of April that the first track was in a situation to admit the public use of it. Since that time it has been in continual operation. The second track was opened on the seventh of October: and all the work connected with the laying of the tracks from Columbia to Philadelphia, may now be considered as complete.

The only works of consequence originally designed, and yet unfinished, are the depots and work-shops at the two inclined planes, a collector's office at Downingtown, the connexion with the Columbia bridge, and a few farm bridges. There are some additional works believed to be necessary, which are mentioned in the report of the engineer, and, if approved by the Legislature, will require an additional appropriation for their construction. These are, side tracks near the city of Philadelphia, the roofing of the inclined planes, and a house and lot for a collector's office in Broad-street.

The amount of business done upon the rail-way since it has been in use has not equalled the expectations which I entertained in the early part of the year. The causes which produced the failure are obvious, and must shortly cease. After the completion of the first track, the difficulties experienced in using it were great: the contractors who were at work on the second track, had no other means of transporting their materials but by using the one already completed; and this, together with the transporting of iron, occasioned so many obstructions in the use of a single track, as to deter many, who would otherwise have made preparations for operating upon it, from making the attempt under these discouraging circumstances.—Another reason operated to lessen the amount of tolls received: after the second track was completed, and a portion of the fall trade might have been expected, a want of locomotives on the rail-way, and a line or lines of boats from Columbia upon the canal, westward, confined the operations upon the rail-way entirely to travelling and the local trade of the country through which it passes.

The doubts which have heretofore been entertained of the practicability of using locomotives successfully upon a rail-way having such high grades and severe curves as those on the Columbia road, have been completely dispelled; and the limited experience which we have had in the use of locomotives, affords conclusive evidence of the fact that they are the only efficient power which can be employed on a rail-way adapted to their use.

The structure of the rail-way itself may be considered as among the most substantial and permanent works of the kind in the country. Several of the bridges, however, having been constructed with a view of accommodating horse-power only, are not so well adapted for locomotives as is desirable.

The expenses of the past year may be classed in the following manner:

For materials and workmanship in laying track on sixty miles of rail-way, and grading at gap,		$730,309 46
Rail-way bridges,		69,327 78
Road and farm bridges,		7,560 58
Stationary engines and buildings,		43,111 24
Depots,		10,465 00
Collectors' offices and toll house,		9,520 43
Connexion with Columbia bridge,		4,060 00
Fence estimates,		672 48
Water stations,		2,550 00
Jobs and repairs,		11,539 71
Engineering, &c.		35,934 10
Locomotive engines,		20,080 04
Cost of iron, transportation and incidental expenses,		536,480 35
Turnouts,		18,145 41
Expenditures of the past year,		$1,499,756 58
Estimates and accounts remaining unpaid,		45,000 00
		$1,544,756 58
Balance remaining at last year's report,	$701,301 33	
Appropriation of 1834,	804,900 00	
		1,506,201 33
Deficiency,		$38,555 25

Estimated expense for ensuing year.

Eighteen locomotive engines and tenders, complete,	$113,400 00
Depots, work shops and side tracks,	8,700 00
Tools and machinery,	5,500 00
Water stations,	2,550 00
Sheds and stabling,	7,000 00
Expenses of locomotive and horse power,	76,260 00
Dwellings for workmen at the depots,	5,000 00
Expenses of stationary engines,	10,000 00
Amount required to complete works now in progress,	30,000 00
For contingent and unforeseen expenses,	11,170 00
	269,580 00
Deficiency,	38,555 25
	308,135 25
Fuel, oil, &c. for stationary engines in stock for the current year,	1,800 00
Total amount required to complete the work in progress, stock the road with locomotive engines, and defray the expenses for the current year,	306,335 25

If it should be deemed expedient to erect a collector's office in Broad street, construct extra tracks near the city of Philadelphia, cover the inclined planes, and grade a road from the Schuylkill bridge to the head of the plane, an additional sum of thirty-five thousand six hundred dollars will be required.

In the appropriation of last year, no provision was made for the purchase of locomotive engines, or for the expense of using the stationary and motive power. These expenses have been heavy and unavoidable, and together with the repairs on the Eastern twenty-two miles, up to the first of June, and the cost of other items which could not have been foreseen at the date of the last Annual Report of the Engineer, make up within a small sum the deficiency of the Estimate which accompanied my last report. It is certainly a matter of unusual occurrence, that the estimate of an Engineer for the expenditure of more than one and a half millions of dollars, and constituted of many items of doubtful cost, should be found to be within a few thousand dollars of the actual cost of the work when completed. The revenue to be derived from this improvement for the current year, must depend, in a great measure, upon the prompt action of the Legislature in making an appropriation for the purchase of Locomotive Engines.—Arrangements have been made with the most experienced engine builders in this country, for six engines by the first of March next, and four others are expected from England in the course of the winter. These will be sufficient to accommodate the spring trade, and develope the advantages which will result to the Commonwealth, from the construction of this Rail-way; should the Legislature fail to make prompt provision for the engines, as they are turned out of the workshops, it will have the effect of checking the operations of those concerned in building them—for although experience has convinced us that we have mechanics at home who can make an engine equal, if not superior to those brought from abroad, and at as cheap a rate; yet they have not capital to expend in the construction of a number of these expensive machines, without meeting a *cash* market for them as soon as they are delivered. It is therefore a matter of the utmost importance to the interest of the State, that provision be made at as early a period of the session as practicable, for the payment of locomotives as fast as they can be constructed; and as evidence of the necessity of this measure, I can assert the fact that if we had now the means of transporting all of the *local* trade which requires to be sent to market, the amount of tolls on this Railway would be trebled. Hence the necessity of providing in due time for the spring trade upon the Canals. If this trade is promptly met at the opening of the Canals, there can be but little doubt that the tolls which will be received in the current year, will remunerate the Commonwealth for the payment of interest on the amount expended in constructing the Railway, in addition to the benefits conferred upon the community by the increased facilities of travelling and transportation. The favorably locality of the Columbia Railway, by which the greater portion of the trade to and from the west, carried upon the State Canals, must pass over it, can scarcely fail in a short time of making it one of the most productive improvements in the State.

The annexed tables, and the report of the engineer, will exhibit the operations of the past year in detail.

Respectfully submitted,
W. B. MITCHELL,
Superintendent Columbia Railway.

Rail-way Office,
Lancaster, Nov. 13th, 1834.

Table No. 1.—Columbia and Philadelphia Railway.

CONTRACTORS.	No. of Sections.	Amount estimated.	Amount paid within the current year.	
William Morrison,	Section No. 1	$13657 61	$7477 61	First track.
Mullison, Collins & Co.	do 1	16100 15	12090 00	2d do. not completed.
Samuel Caldwell,	do 2	30197 42	27162 42	
Flynn & M'Kinley,	do 3	27359 15	22439 15	
Do do	do 4	27980 30	18795 30	
Jonathan Leslie,	do 5	24175 54	23100 54	
Kephart & Sullivan,	do 6	12432 38	5052 38	First track.
Hambright & Overholtzer,	do 6	11011 60	11011 60	Second track.
Darling & Darling,	do 7	15301 67	14136 67	
Hambright & Overholtzer,	do 7½	22598 36	20843 36	
Michael Burke,	do 8	25716 24	21031 24	
Elliott, Ball & M'Manus,	do 9	27491 92	23696 92	
Jacob C. Carncross,	do 10	26086 94	17436 94	
Daniel Johnson,	do 11	34898 98	27878 98	
Gearhart & Brackbill,	do 12	24230 21	16160 21	
B. & C. O'Freel,	do 13	28306 73	25456 73	
James Stewart,	do 14	27259 98	25974 98	
Richard English,	do 15	30839 50	25284 50	
James Appleton,	do 15½	30502 65	28332 65	
Michael Malone,	do 16	23645 80	20270 80	
Do do	do 17	10671 56	6056 56	First track.

Table No. 1—Continued.

CONTRACTORS.	No. of Sections.		Amount estimated.	Amount paid within the current year.	
R. J. & B. M'Grann,	Section No.	17	$10208 62	$10208 62	Second track.
M'Cullough, Anderson & Co.	do	18	24345 09	18285 09	
M'Cullough & English,	do	19	26474 55	22134 55	
Patton & Carboy,	do	20	17270 42	14224 38	
Keys, Mosher & M'Grann,	do	20	9398 89	9398 89	
Curry & Keys,	do	21	22161 10	19411 10	
Mosher & M'Grann,	do	21½	21147 51	17027 51	
Mullison, Collins & Co.	do	22	28478 06	22672 64	
John Rhome,	do	23	17648 36	13363 18	
Hunt & Parke,	do	24	27803 82	21183 82	
Reuben Winslow,	do	25	26539 45	19919 45	
Jacob Printup,	do	26	20007 61	13632 61	
M'Grath & O'Freel,	do	27	27252 18	23412 18	
Thomas Jacobs & Co.	do	28	29798 86	22588 86	
Philip Duffy,	do	29	31546 95	26041 95	
Moorhead & Leyman,	do	30	22072 28	14937 28	
Benjamin Cornelius,	do	31	22428 66	15898 66	
James Appleton, (North end,)	do	30	19854 65	15179 65	
Daniel Johnson, (South end,)	do	30	13519 50	11099 50	
				$730,309 46	

Table No. 2.—Columbia and Philadelphia Railway.

CONTRACTORS.	KIND OF WORK.	Am't estimated.	Amount paid within the current year.
	Bridges.		
Dodd, Bishop & Britton,	Schuylkill bridge,	$133946 57	39316 57
Winslow & Petriken,	Valley Creek bridge,	22254 21	4505 21
Buffington, Jackson & Co.	Coatsville bridge,	52916 00	25506 00
			$69,327 78
	Road Bridges.		
Hambright & Overholtzer,	Bridge on section No. 5,	873 39	873 39
Abner Williams,	Do do 11,	873 32	873 32
Hunt & Parke,	Do do 25,	804 21	566 21
Richard Webster,	Do do 26,	462 23	462 23
Do do	Do do 27,	614 79	614 79
Abner Williams,	Do do 29,	1068 59	1068 59
Martin Armstrong,	2 Do do 30,	1742 00	1742 00
Israel Cooper,	Do do 1,	1360 05	1360 05
			$7,560 58
	Stationary Engines and Buildings.		
Israel Cooper,	Engine House, Columbia plane,	11780 00	8095 00
Rush & Muhlenberg, Schuyl. plane,	Do do with machinery, &c.	31538 28	21978 28
	Machinery, &c. Columbia plane,	15587 96	13037 96
			$43,111 24

Table No. 2—Continued.

CONTRACTORS.	KIND OF WORK.	Am't. estimated.	Amount paid within the current year.
	Depots.		
Israel Cooper,	Columbia plane,	$6500 00	5535 00
Joshua W. Jack,	Schuylkill plane,	5800 00	4930 00
			$10,465 00
	Collectors' Offices and Toll Houses.		
Joshua W. Jack,	Toll house at Schuylkill plane,	1850 00	1275 00
Samuel R. Slaymaker,	For lot and house at Lancaster,	1900 00	1900 00
J. W. West,	Collector's house at Philadelphia,	3145 43	3145 43
Blattenberger & Jones,	Weighmaster's house at Columbia,	2000 00	1700 00
G. Hansell,	Deed for lot,	1500 00	1500 00
			$9,520 43
	Connection with Columbia Bridge.		
John Black,	Connection with Columbia bridge,	5925 00	4060 00
	Fence Estimates.		
Jeremiah Pratt,	Fence,	135 72	135 72
Henry Leaman,	Fence on section No. 23,	245 48	70 43
J. & J. Hunt,	Do do 29,	304 20	64 00
William Noble,	Do do 32 & 33,	156 77	100 00
James G. Henderson,	Do do	256 07	256 07
Ashal Walker,	Do do	46 26	46 26
			$672 48

Table No. 3.

Columbia and Philadelphia Rail-way.

Contractors.	*Kind of work.*	*Amount est'd.*	*Am't p'd within current year.*
William M'Connell,	Turnouts,	$22,462 26	18,145 41
Waters & North,	Water stations,	5,500 00	2,550 00
Robert Strain,	Jobs & repairs,	6,136 08	6,136 08
John Pugh,	do. do.	2,785 05	2,785 05
Thomas Wallace,	do. do.	1,312 85	1,312 85
William North,	do. do.	1,305 73	1,305 73
			$11,539 71

A. & G. Ralstons, paid them for rail-way iron,	$427,932 90
Paid sundry persons for transporting rail-way iron, machinery, &c.	76,470 02½
Sundry persons for castings,	10,373 71
Repairing engines and tenders,	227 57
Canvass, lumber, and other materials,	2,395 28
Repairing bridges,	1,726 70
Water tanks,	826 53
Fuel, oil, &c. for locomotive and stationary engines,	3,522 60
Ropes for inclined planes,	4,477 52
Laying track near Schuylkill bridge, swivels, and other mechanical jobs,	6,037 17
Rent of warehouses, offices, storing iron, printing, stationary, &c.	1,735 10
Cars, and tools for workshops,	755 25
Paid for locomotive engines,	20,080 04
Engineering, and incidental expenses,	35,934 10
	$592,494 49½

Table No. 4.

Damages paid on the Columbia Rail-way on offers made by the Board of Canal Commissioners.

Date of Payment.	To whom paid.	Amt. paid.	Remarks.
1833.			
Aug. 14.	Jacob Meyers,	$5 00	Personal damage.
Dec. 27,	Diller B. Ferry,	50	" "
Oct. 7,	John Fleming, Ex'r.	20	" "
1834.			
July 2,	Henry Carter,	500	Damage to real estate.
" 24,	John Beaver,	50	Personal damage.
Sep. 15,	Thomas Badaraque,	100	Damage to real estate.
Oct. 17,	Abner Ubil,	120	" "
" 23,	George Brown,	40	" "
" 4,	Christian Mumma,	30	" "
" 21,	John Kneagg,	350	" "
Nov. 8,	Lindley Coates,	15	" "
" 8,	John Reese,	600	" "
Oct. 25,	Hannah Dickinson,	25	" "
Nov. 10,	Horatio G. Miller,	25	Personal damage.
" 11,	Benjamin Davis,	45	Damage to real estate.
" 11,	" "	36	Personal damage.
Oct. 23,	Thomas Pennington,	25	" "
Nov. 1,	James M'Graw,	40	" "
Dec. 2,	Thomas M'Clellan,	30	" "
July 5,	William S. Kennedy,	65	" "
Aug. 13,	Robert Hope,	30	" "
Jan. 18,	Samuel P. M'Clelland,	45	" "
" 21,	John D. Steele,	305	Damage to real estate.
April 26,	Azariah Linert,	30	Personal damage.
Dec. 2,	John Griffith,	20	" "
		$2,601 00	

List of officers now employed on the Columbia and Philadelphia Rail-way.

Names.	Employment.	Salary.
William B. Mitchel,	Superintendent,	$3 00
William Fleming,	Clerk,	3 00
Edward F. Gay,	Principal Engineer,	2500 00 per ann.
W. K. Huffnagle,	Ass't Engineer of line,	4 00

No. 2.

Report of E. F. Gay, Engineer.

Engineer Department,
Lancaster, Nov. 7th 1834.

To Wm. B. Mitchell, Esq.
Superintendent of the Columbia and Philadelphia Rail-way.

Sir—In presenting you my second annual report on the situation of the Columbia and Philadelphia rail-way, it affords me great pleasure that I am able to congratulate you on the successful completion of both the main tracks within the past year. The first track was opened for public use on the 16th of April, and the second on the 7th of October.

As some work remains to be done on the line, for the accommodation of the trade, and as steam has been adopted as the principal motive power, I propose in this report to refer, first, to the construction of the rail-way, and, secondly, to the motive power.

CONSTRUCTION.

The only works at present in progress, and necessary to complete the rail-way, are—a double track along the east side of the Columbia basin; some embankment and track to connect with the river bridge at Columbia; a collector's office at Downingtown, with addition to the office at Lancaster; three pair of weigh scales; two bridges, and a system of turnouts and sidings: all of which (the collector's office at Downingtown excepted) will probably be completed by the latter end of next month (December.)

A public siding, about one thousand feet in length, is much wanted on each side of the main line, extending west from Broad-street, in the city of Philadelphia, for the accommodation of individuals who are desirous of intersecting the road with lateral tracks. Applications are frequently being made for permission to put in turnouts near the city; and unless the siding above alluded to shall be constructed by the State, the frequency of the turnout castings, placed in the main track by individuals, will prove a fruitful source of annoyance to the regular travelling, as well as destruction to car wheels.

In consequence of a heavy expense having been incurred by the State, in the construction of a carriage-way connected with the Schuylkill viaduct, I would recommend that a road should be extended parallel to the rail way, from the west end of the bridge to the head of the inclined plane. By this improvement, the populous district of country adjacent to the head of the plane would have opened for its accommodation the nearest road to Philadelphia, and the bridge would, without doubt, soon become a valuable source of revenue.

I would also recommend the construction of sheds to cover the entire length of the Schuylkill and Columbia planes, which would add materially to the durability of the ropes, would ensure greater regularity in passing the planes at all seasons of the year, would render the signals used more certain, and would afford additional safety to the multitude of passengers that travel the road, the number of which is daily increasing.

The estimated cost of two sheds is $ 25,000. The usual durability of ropes on inclined planes, when exposed to the weather, averages about *one year*. If the planes are covered, the ropes may be safely trusted for two years. This being the case, the subject, in a pecuniary point of view, would stand as follows:

Present annual cost of ropes for two planes,	$ 3,300 00
Estimated cost, with sheds,	1,650 00
Annual difference,	$ 1,650 00
Interest on sheds at six per cent,	1,500 00
Cost in favor of sheds,	$ 150 00

There being but two planes on this rail-way, the immense amount of trade and travel, that may reasonably be expected on it, would seem to require that every facility should be afforded, for a safe and easy transit, which circumstances will allow of.

The present residence of the collector at Philadelphia having been erected with a view of accomodating a weigh-master, and as the appointment of that officer will soon be necessary, I would suggest the propriety of making arrangements for the permanent location of the collector's office, in Broad-street. This street is admirably calculated for the accommodation of an extensive rail-way business; and as the principal depots for trade are, and probably will be for several years to come, erected on it, the contiguity of the collector's office would materially facilitate the transaction of business, and ensure regularity in the starting of *the trains*.

Should the cost of the work under contract be found to exceed the estimate of last year, it is wholly attributable to an unexpected increase in the difficulties at the *gap section*, which were met with subsequent to my last report; to the necessity of resorting to distant springs for an additional supply of water for the Schuylkill stationary engine; to a change in the location and plan of connexion with the Columbia bridge, and to the extra cost of hauling a large portion of the rail-way iron with horses, instead of locomotive engines, as had been anticipated in my former estimate.

The following estimate comprises the amount of work in progress and necessary to finish the line:

Extension of double track of rail-way along east side of the Columbia basin, inclusive of grading street, putting in swivels, and completing the connexion with the Columbia bridge,	$ 7,700 00
Turnouts and sidings,	11,950 00
Weigh scales and collector's offices,	3,100 00
Farm bridges and fencing,	2,250 00
	$25,000 00
Add for contingent expenses,	5,000 00
Amount required,	$ 30,000 00

The following is an estimate of the works recommended in the preceding report, but not in progress:

Sidings, west of Broad-street, (double track,)	$ 2,100 00
Road from Schuylkill bridge to head of plane,	2,500 00
Covering two inclined planes,	25,000 00
Collector's office in Broad-street, Philadelphia,	6,000 00
Total,	$ 35,600 00

Motive Power.

In reference to this subject, I have to inform you, that the experience of the past year has proven the sentiments expressed in my last annual report *to be correct*, in almost every particular.

The trade on this road cannot possibly be accomplished by a promiscuous use of horses, as no system of regulations can be enforced, so as to prevent the repeated and vexatious interruptions consequent upon travelling on a rail-way, with horses, at different degrees of velocity, to suit the different interests of individuals using it. And I have no hesitation in asserting, that the *plan* proposed in my last report, viz: "Steam as a motive power, furnished by the Commonwealth, allowing individuals to furnish cars, and attach to the engine under proper regulations," will be found the only effectual one to accommodate the wants of the public.

Of the fifteen engines authorized to be procured for the road by a resolution of the Board of Canal Commissioners, *two* have been completed, viz: The "*Lancaster*," and "*Columbia*," and are in daily use.

The engine "*Lancaster*," was placed on the road and commenced running on the 28th of June, since which time, it has hauled a large portion of the iron required for the second track, and has latterly been employed in the transportation of freight.

The trips of this engine have been performed with great regularity, seldom being detained, except by repairs necessary to the tenders or train.—The very few accidents which have occurred, were not of a serious nature, and are wholly attributable to the use of a single track, and to other causes which will be entirely removed whenever the horses are withdrawn from the line, and steam being alone used, shall travel in opposite directions, on separate tracks.

The engine "*Columbia*," commenced running on the 10th of September, and although it did not at first appear as perfect as was desired, yet it is now in excellent order, and its performance is highly satisfactory; indeed these engines are justly considered superior and beautiful specimens of mechanism, and reflect great credit on the ingenious mechanic (M. W. Baldwin, Esq., of Philadelphia,) who constructed them. They are each supported on six wheels, which is found to be the only arrangement that will enable a locomotive engine to overcome the severe curves, connected with the high grades upon this road, without injury to the engine or rail-way. A *third* engine is expected from the establishment of Mr. Baldwin, during the present month, and *three* others, within the next three ensuing months.

Four engines from the establishment of Mr. Stephenson (England,) are engaged to be on the road on or before the 1st of March next, and also *two* from the Messrs. Sellers of Philadelphia, about the same time; in all 10 engines, (in addition to the two on the road,) are in preparation to be ready for running on the road, on or about the 1st of March next. The balance to be finished by the 1st of June.

As all the engines preparing for the road are designed to be of the same class, the following statement of the capacity of the "Lancaster," may be applied to the others:

Weight of the engine, eight tons; capable of drawing thirty-six tons exclusive of cars, say fifty-six tons gross. Amount taken at each load *limited* at thirty tons, or about forty-eight tons gross. Running time, between the inclined planes, (seventy-seven miles,) with the above loads, *eight hours*, including stoppages.

Expenses of one trip.

20 bushels of coke, at 20 cents,	$4 00
1½ cords of wood at $4,	6 00
Engineer and attendants,	4 00
Oil,	60
Total,	$14 60
If to the above is added the *estimated* value of horse power to and from the foot of the planes, and attendance at water stations,	2 40
The actual expense of motive power for a train of cars from Columbia to Philadelphia, will stand	$17 00

Annexed is an estimate of the expenses of the stationary engines and attendance at the inclined planes:

Schuylkill Plane,		
Anthracite coal, 1¼ tons per day,	$6 25	
Wood, 1-6 of a cord "	70	
Oil and attendants, "	9 05	
		$16 00
Columbia Plane,		
Anthracite coal, one ton per day,	$5 00	
Wood, 1-7 of a cord, "	55	
Oil and attendants, "	7 95	
		13 50
Expenses of both planes,		$29 50

Extensive arrangements are now being made along the line by individuals, who purpose to make an active use of the road during the ensuing year; and when the local trade of the populous and fertile country through which this rail-way passes, together with the great increase of travelling and the immense amount of transportation between Philadelphia and Pittsburg are taken into consideration, it must appear obvious that preparations for motive power to accommodate the extensive business anticipated, should be made with the least possible delay, and that to a free and perfect use of the road, such preparations should always be in advance of real want.

With this view of the subject, I have estimated twenty locomotive engines as being requisite to accommodate the trade and travel for the ensuing year, (1835.) The arrangement of their occupation will vary, according to circumstances, but will probably be nearly as follows:

Whole number of engines,		20
Engaged in hauling western trade,	8	
Do. do. passengers,	4	
Do. do. local trade,	3	
	—	15
		—
Engines on hand to supply deficiencies,		5

The depots and workshops at the Schuylkill and Columbia inclined planes, and the water stations along the line, are all in a forward condition, and will be finished early in December. The cost of the depots will be increased beyond the estimate of last year, in consequence of their having been constructed *fire proof* and enlarged so as to accommodate a greater number of engines than was *then* contemplated. The number of water stations has also been increased, to suit the wants of the engines.

I would here remark, that the *plan* suggested in my report of last year, viz: "that individuals using the road should make their own arrangements for taking their cars to and from the foot of the planes," has been found, by the experience of the past season, to be defective; as all persons who casually use the road, and cannot therefore afford to keep horses at each end of the line, are left at the foot of the planes without the means of proceeding further, which produces delays that interfere seriously with the regularity necessary to be observed in the passage of the trains. To remedy this difficulty, engagements have been made with individuals, on behalf of the Commonwealth, to furnish horses and haul to and from the foot of the planes, all the cars which form the *trains* of the engines.

This plan has been in operation since the 20th of September, and is found fully to answer the purpose desired. Owing to the limited number of cars now conveyed, as forming but the single train of an engine *each way* per day, no price has yet been fixed on for the labour of the horses; neither can any arrangement be satisfactorily made until locomotive engines are exclusively used between the inclined planes, when the entire use of the road may be reduced to a *correct*, and, I may add, *perfect system.*

The erection of stables at the foot of the inclined planes and each extremity of the line, and also sheds at four different points on the road, for the reception of engines with their trains stopping over night, together with a building for the accommodation of a spare engine at ***Parke's station***, (being a central position,) are considered indispensably necessary, and accordingly included in the estimate.

The following is an estimate of the amount required to furnish the motive power, (exclusive of engines delivered and work done,) together with its expenses for the ensuing year:

Eighteen locomotive engines and tenders, complete, at $6,300 each,	$113,400 00
Depots, workshops and side tracks,	8,700
Tools and machinery,	5,500
Water stations,	2,550
Sheds and stabling,	7,000
Expenses of locomotive and horse power,	76,260
Dwellings for workmen at the depots,	5,000
Expenses of stationary engines,	10,000
	228,410 00
Add for contingent and unforeseen expenses,	11,170 00
Amount required for motive power,	239,580 00
Add amount required for construction,	30,000 00
Whole amount required to finish,	$ 269,580 00
Should the collector's office and siding at Broad-street, covering the planes and making road along *side* be authorized, the amount required will be	$ 305,180 00

Notwithstanding the large amount required to stock this road, it is confidently believed that if *early arrangements* should be made to meet the wants of the public, the value of the *rail-way*, as a source of revenue, will fully realize the most sanguine expectations of its friends.

Very respectfully submitted,

EDW. F. GAY, Engineer.

Allegheny Portage Rail-Way.

No. 3.

Report of Samuel Jones, Superintendent.

RAIL-WAY.

To James Clarke, Esq.
President of the Board of Canal Commissioners.

Sir:—At the period of my last annual communication to the board, the first track of the Portage rail-road was reported as nearly completed; but, owing to the setting in of winter, and the early snows of that season, the use of the rail-way was not practicable until the ensuing spring. At that time however, on the eighteenth of March last, the road was formally opened for public use, and the transportation upon it has continued almost uninterrupted up to this day. With the exception of one death, which was occasioned by the running away of a car on plane No. 1, no accidents of a material character have occurred, whilst the cars were in the charge of the agents of the Commonwealth. Delays and stoppages have been very inconsiderable; and such as have taken place, arose from the necessity of cleansing the boilers of the engines, and making such additions and repairs about the machinery of the planes as experience and utility required. And, in relation to delays, I will here take occasion to say, by way of contradiction to reports which were put in circulation last spring, by some of those interested in transportation, touching the detention of goods on the Portage, that at no time were cars delayed more than one day, and delays even of this kind were very rare.—The whole number of days lost, exclusive of Sundays, during the entire season, do not exceed six or seven. The engines and machinery, from their first trial up to this time, have continued to do their work with great facility, and have fully realized all that was expected from them, as relates to the plan adopted, in the application of stationary steam power upon inclined planes.

The transportation upon the rail-way, east and west, has been very extensive, considering that this is the first season, and, comparatively speaking, one of experiment, rather than profit. The results, when communicated to the board by the proper officer, will doubtless be gratifying, not only to them, but to every citizen of Pennsylvania who feels an interest in the completion of the *main line* of our internal improvements.

A second track of rail-way upon the Portage having been authorized by the Legislature, the work, by the direction of the board, was put under contract on the thirty-first of May last. The contracts were allotted to good bidders, generally, and at fair prices; and the work has progressed with great rapidity. Out of the whole forty-six sections allotted, but one has been rendered liable to forfeiture.

A great number of the sections are now ready for the iron, and on some of them the rails are now being laid; and I anticipate, if the iron is received in season, the whole of the rail-way may be completed this year.

The length of the second track, or that portion of it upon which edge rails are now to be laid, is about twenty-eight miles and fourteen hundred yards—the remaining distance, required to make up the entire length of the Portage, (36 69-100 miles,) having been made under former contracts for laying the first track, and is embraced in the sidings and double tracks on the inclined planes, and at the basins at Johnstown and Hollidaysburg.

The whole of the second track at present under contract, except a small portion of sections Nos. 11, 29, 39 and 42, where there are heavy embankments, and parts of sections Nos. 1 and 46, on the basins, will be laid on stone blocks, similar to those used in the first track. In the curves, however, where the radius is less than 955 feet, stone sills, running across the track at every nine feet, have been adopted. This measure will render the rail-way, at the several points of curvature, extremely solid and durable, and prevent the possibility of lateral separation. Upon the embankments above mentioned, the edge rails will be placed upon timber, connected by locust ties. The whole extent of the latter kind of road in the main track, will scarcely exceed six hundred feet.

The following are the quantities of iron materials required for the second track :

Edge rails,	16,950	bars, 18 feet long, weighing		1,793½	tons.
Chairs,	101,420	weighing		620	"
Pins,	202,840	"		41⅕	"
Wedges	101,420			41⅕	"
Flat rails,			about	40	"

The contract for the edge rails was entered into in London, on the 5th of June last, and through the industry and exertions of the manufacturers, the whole quantity required was made and shipped for Philadelphia, as I understand, by the 6th of September. The Iron is of an excellent quality, and owing to the attention of Mr. Snyder the Commonwealth's agent in England, it has been manufactured in the best manner in every respect. The bars are all eighteen feet in length, and weigh about thirty-nine and a half pounds per yard.

As much has been said and urged by many intelligent and respectable individuals, against the propriety of sending to a foreign country for our Iron, when it is one of the staple commodities of our own State, and where it is manufactured to a greater extent, than in any other part of the Union; it may not be improper to remark here, for the information of those who may not be aware of all the facts connected with the subject, that setting aside the very great difference of cost in favor of English rails, and their exemption from custom house duties, there is no one establishment in the United States, that could manufacture the quantity required for the second track of the Portage in a less time than twenty-four or twenty-seven months—whereas at one house in Wales (Ebervale) the whole amount was fabricated in about twelve weeks.

The cost of the edge rails per ton, of two thousand two hundred and forty pounds, as per contract, is eight pounds sterling—being seventeen shillings and six pence more per ton, than the cost of that for the first track. This advance in price was owing to the increased demand for Rail-road Iron in the United States. I have been told that a short time previous to making our contract, rails had been sold in England at eleven pounds.

The cost of a ton of edge rails delivered on the Portage, including all the incidental charges, is estimated at about sixty-eight dollars and nineteen cents.

Of the sixteen thousand nine hundred and fifty bars of edge rails contracted for, fourteen thousand five hundred and eighty-six, have arrived at Philadelphia, and as arrangements have been made for the transportation of the rails from the Delaware, thirteen thousand nine hundred and ninety-eight bars have been ordered for delivery upon the Portage, a great part of which is already delivered, and the balance in the hands of the carriers, and on the way. Should the remaining two thousand three hundred and sixty-four bars now at sea arrive, as expected, in the early part of November, there is no doubt but we shall have the entire quantity, delivered, distributed and laid on the several sections of the road in good season. The whole cost of the edge rails when delivered on the road, is estimated at one hnndred and twenty-two thousand and three hundred dollars.

The cast iron chairs for the second track, have all been made in this country, as they can now be afforded by the manufacturer at a price not exceeding that attendant upon the purchase of those made in England. The average contract price which I now pay for American chairs is about fifty-five dollars and ninety-three cents per ton of two thousand two hundred and forty pounds. These chairs are made at Blairsville, Johnstown, Jackson Furnace in Bedford county, and at Lewistown. A large portion of the chairs have been cast and delivered. The estimated cost of the whole number required for the second track, is thirty-two thousand nine hundred and fifty dollars.

The pins and wedges have been contracted for at Pittsburg. The pins are delivered on the road at five seven-eighths cents per pound—and the wedges at six cents per pound. These prices are somewhat less than those of similar materials from England, when delivered. The estimated cost of the pins and wedges, is ten thousand seven hundred and fifty-two dollars.

As the board have deemed it advisable to place locomotives upon the Portage, for the purpose of facilitating the transportation, I have, in pursuance of their resolution to that effect, made contracts for the manufacture of three engines. One of them is now making at Boston, and the two others at New Castle, Delaware. The first I presume is nearly completed, and the others are to be done by the 15th of November. We shall endeavor to have them on the road for trial, at the earliest period practicable, after their completion. By the resolution of the board, I was directed to procure *five* locomotives during the present year, but I found by personal examination that it was not possible to procure that number, in the time pointed out. Owing to the great demand for these engines, the establishments which I visited were generally filled with orders to the extent of their ability to execute for a considerable length of time. It is my intention to have the two remaining engines made at Pittsburg, and shall as soon as convenient, have one of those now making, carried to that place to serve as a model.

It being intended that the locomotives now constructing, should be used upon the levels adjacent to Johnstown, buildings for their protection and repair &c., have been contracted for, at that place. Buildings of a similar character will also be erected at Hollidaysburg, and ground for the purpose has been purchased.

Since the last report, two scales for weighing cars have been erected upon the Portage—one at Johnstown, and one at Hollidaysburg. The platform of each scale is calculated to suspend four cars. Any amount, however, from five pounds to sixty thousand, can be weighed with equal facility and with great accuracy. They cost five hundred dollars each, and were erected by E. T. Fairbanks & Co. of Pittsburg. These scales are of immense advantage to the Commonwealth, as they not only enable the collectors to ascertain the exact weight of the articles transported, but they serve as an effectual check upon any infringement that might be attempted on the revenue.

At the instance of the principal engineer, I have purchased during the present year, eight new ropes for the inclined planes. These, therefore, with two extra ones procured last year, will constitute a new set, which will enable us to meet any emergency during the ensuing season, when the two tracks shall be in operation. Having received information of the great superiority and durability of ropes, now in use upon some of the English rail-ways, made of New Zealand flax and saturated with a solution of India rubber or gum elastic, I have ordered one of the eight ropes above mentioned, from London, as a matter of experiment. It is now in Philadelphia, and when brought upon the Portage, will be put into use as soon as practicable in order to test its qualities. Should ropes of this character prove, as represented, to be of superior strength and durability to those now used, it will be of great advantage to the Commonwealth to purchase them in future, as they can be delivered in Philadelphia at about twelve and a fourth cents per pound including all charges.

In accordance with a resolution of the board, adopted for the purpose of rendering the rail-way more useful and perfect, and to prevent delays which might occur from accidents accruing to any of the steam machinery now in use, ten new engines have been contracted for during the past summer. They are now completed and ready to be put up. All the incidental work connected with the second track, is now principally under contract, and in a forward state, and I have reason to expect that the two tracks of rail-way will be ready for transportation by the 15th of March next.

I shall now proceed to state in detail, for the information of the board, the various kinds of work contracted for on the rail-way since its commencement, with the present estimated cost of each, the amount paid on them, and the sums yet required to complete the entire road:

Grading and Masonry.

Cost of grading as per estimates,	$472,349 03	
Add amount allowed Snodgrass and Durno, on section No. 11, by authority of the Legislature,	5,436 43	
	$477,785 46	
Deduct amount of forfeitures,	2,845 10	
Real cost of grading,	474,940 36	
Amount paid contractors,	474,797 48½	
Leaving a sum yet due of		$142 87½
Cost of viaducts as per estimates,	79,755 80½	
Amount paid contractors,	79,655 29½	
Balance due,		100 51
Cost of culverts per estimates,	34,319 39¾	
Deduct amount of forfeitures,	76 19	
Real cost of culverts,	34,243 20¾	
Amount paid contractors,	34,231 72¼	
		11 48½
Cost of bridge for turnpike,	2,327 44	
Amount paid contractors,	2,327 44	

FIRST TRACK.

Stone blocks as per estimates,	$27,072 15¼	
Amount of forfeitures,	39 75½	
Real cost of stone blocks,	27,032 39¾	
Amount paid contractors,	27,032 39¾	
Timber for rail-ways as per estimates,	47,184 50	
Amount paid contractors,	47,184 50	
Iron edge-rails, chairs, &c. (foreign,)	170,550 53	
Amount paid for the same,	170,550 53	
Chairs and other castings, (American,)	52,315 50¾	
Amount paid on the same,	52,239 00¼	
Balance due contractors,		76 50½

Estimated cost of laying rail-way, first track,	$135,776 26½	
Deduct amount forfeitures,	407 84	
Actual cost of laying first track,	135,368 42½	
Amount paid to contractors,	135,168 42½	
Balance yet due,		$200 00
Estimated cost of engine houses, sheds, &c.	66,640 49	
Amount paid contractors,	66,124 13½	
Balance yet due,		516 35½
Stationary steam engines, actual cost,	64,968 00¼	
Amount paid to contractors,	64,968 00¼	
Cost of ropes for planes,	20,531 05	
Amount paid contractors,	20,531 05	
Incidental expenses, including iron work:		
Tubes for wells, &c. &c. and rigger's loft,	3,688 05	
Amount paid on the same,	3,688 05	
Repairs of first track, previous to the appointment of supervisor,	13,391 71¾	
Amount paid on the same,	13,391 71¾	

SECOND TRACK.

Estimated cost of edge rails, &c., (foreign,)	122,300 00	
Amount paid on the same,	67,208 54	
Sum yet required to pay,		55,091 46
Cost of chairs and castings, (American,)	32,950 00	
Amount paid to contractors,	16,020 00	
Sum yet required to pay,		16,930 00
Cost of pins and wedges, (American,)	10,752 00	
Amount paid,	00,000 00	
Sum yet required to pay,		10,752 00
Estimated cost of laying second track of rail-way,	169,934 23	
Amount paid contractors,	69,406 00	
Balance that will be required,		100,528 23
Estimated cost of 2d set of engine houses,	17,895 32	
Amount paid contractors,	5,610 00	
Sum yet required to pay,		12,285 32

Estimated cost of two set of engines,	39,425 00	
Amount paid on the same,	13,825 00	
Sum yet required to pay,		25,600 00
Estimated cost of ropes,	18,431 30	
Amount paid,	00,000 00	
		18,431 30
Estimated cost of dwellings for weigh-masters, rail-way scales, sheds, &c. &c.	6,077 00	
Amount paid to contractors,	3,295 00	
Sum yet required to pay,		2,782 00

INCIDENTAL WORK AND MISCELLANEOUS CHARGES.

Cost of fencing and removing buildings,	2,174 83	
Amount paid on the same,	2,105 43	
Balance yet due,		69 40
Estimated cost of fencing and clearing lots at inclined planes,	1,572 87	
Amount paid on account,	526 50	
Sum yet required to pay,		1,046 37
Miscellaneous charges, including the purchase of materials for rail-way, office expenses, &c. since the commencement,	10,048 07	
Amount paid on these,	10,048 07	
Estimated cost of fuel for 1834,	3,650 00	
Estimates paid,	2,445 00	
Balance required to pay,		1,205 00
Expense of engineer department and superintendents ditto, from commencement,	54,993 00	
Amount expended,	52,542 00	
Balance due on 1st November, 1834,		2,451 00
Salaries of engine and car tenders, and their assistants, at planes,	7,401 30	
Amount paid to them,	5,813 23¾	
Balance due on 1st November, 1834,		1,568 07
Salaries of riggers,	1,676 87½	
Amount paid on them,	1,474 87½	
Balance due on 1st November, 1834,		202 00

Estimated cost of depots, machine shops, water stations, &c.,	$25,385 00	
Amount paid on them,	00,000 00	
Sum required to pay,		$25,385 00
Estimated cost of lots to be purchased for engine houses, depots, &c.,	1,600 00	
Amount paid on them,	0,000 00	
		1,600 00
Estimated cost of three locomotive engines and tenders, at present contracted for,	18,850 00	
Amount paid on them,	2,500 00	
Sum yet required to pay,		16,350 00
The actual and estimated cost, therefore, of the Portage, including grading, masonry, and first and second tracks, three locomotives, and all incidental charges and expenses, is	1,734,134 28¾	
Of this amount there has been paid,	1,444,709 40	
Leaving a sum yet to be paid, as per statement above, of		$293,424 88¾

For the purpose of keeping the board fully apprized of the amount of funds provided for the construction of the road, and their application, I again lay before them a statement of the appropriations made by the Legislature:

By an act of 21st March, 1831, there was appropriated to the Allegheny Portage, and Frankstown line of Juniata canal,	$700,000 00
From this sum, there was deducted for payment of work authorized previous to the passage of the act of 21st March, 1831, and for the payment of interest, as per act of 30th March, 1831,	126,378 48
Leaving, to be applied to the new work to be put under contract,	$573,621 52
Out of this sum there was set apart by the board, for the construction of the Frankstown canal line,	380,645 65
Leaving, to be devoted to the Portage, the sum of	$192,975 87

Afterwards, on the 10th of March, 1832, there was again deducted from this sum, for the payment of interest,		$12,975 87
Making the whole sum actually available for rail-road purposes, out of the appropriation of $700,000,		$180,000 00
By an act of the Legislature, of March, 1832, a further appropriation was made to the Portage, of		620,000 00
Making the whole sum applicable to the rail-road,		$800,000 00
Again, from this amount there was deducted, for the payment of interest, under act of 11th June, 1832,		39,581 40
Leaving for rail-way purposes, out of the appropriations of 1831 and '32,		$760,418 60
By the act of 16th of February, 1833, there was a further appropriation of		414,793 66
By the act of April, 1834, another appropriation was made, of		365,486 35
There has also been refunded to the rail-road account, the sum heretofore noted as being deducted for payment of interest,		39,581 40
Making the whole sum available for the use of the Portage, as per acts of 1831, '32, '33 and 34,		$1,580,279 41
Now the amount of payments are as follows:		
Amount paid previous to last report,	1,041,121 56	
Amount paid since last report,	403,587 84½	
		1,444,709 40½
If then we deduct this sum from the aggregate appropriations, there will remain unexpended		$135,570 00½
The estimated amount, however, that is required to pay for work under contract, and to meet expenses connected with construction, locomotives, ropes, fuel, &c. exclusive of the charges attendant upon the use of motive power in 1835, is	293,424 88	
Add for contingencies,	8,000 00	
		301,424 88
From this sum deduct the amount of appropriations as yet unexpended, and the sum required to be provided by the Legislature, will be		$165,854 87½

Table shewing the payments, &c. on the Allegheny Portage Rail-Road, since its commencement, Nov. 1st, 1833.

	Amount paid previous to last rep.	Amount paid since last rep't.	Total amount paid.	Amount required.	Am't forfeited.	Estimated cost.
Grading.						
Grading,	$465623 00½	9174 48	$474797 48½	$142 87½	$2845 10¼	$477785 46¼
MASONRY—Viaducts,	75223 05½	4432 24	79655 29½	100 51		79755 80½
Culverts,	34231 72¼		34231 72¼	11 48½	76 19	34319 39¾
Bridge,	2327 44		2327 44			2327 44
First Track.						
Stone blocks,	26182 06¾	850 33	27032 39¾		39 75½	27072 15¼
Timber,	38160 00	9024 50	47184 50			47184 50
IRON—Rails, chairs, &c. (foreign,)	162386 69¼	8163 83¾	170550 53			170550 53
Castings & do. (American,)	40502 14¼	11736 85¾	52239 00¼	76 50¼		52315 50¼
Laying railway, first track,	82685 00	52483 42½	135168 42½	200 00	407 84	135776 26½
Engine houses, sheds, &c. first set,	31461 00	34663 13¼	66124 13¼	516 35½		66640 49
Stationary steam engines, do.	25425 00	39543 00¼	64968 00¼			64968 00¼
Ropes, do.	14587 01	5944 04	20531 05			20531 05
Incidental expenses, including screw bolts, copper tubes, chains, riggers loft, &c.	848 50½	2839 54½	3688 05			3688 05
Repairs,		13391 71¾	13391 71¾			13391 71¾
Second Track.						
Iron E. rails and flat bars, (foreign,)		67208 54	67208 54	55091 46		122300 00
Chairs and Castings, (American,)		16020 00	16020 00	16930 00		32950 00
Pins and wedges, do.				10752 00		10752 00
Laying railway, and materials, second track,		69406 00	69406 00	100528 28		169934 28
Engine houses, &c., second set,		5610 00	5610 00	12285 32		17895 32
Stationary engines, second set,		13825 00	13825 00	25600 00		39425 00
Ropes,				18431 80		18431 80
Incidental expenses, including railway, scales, sheds and driftings,		3295 00	3295 00	2782 00		6077 00
Incidental.						
Clearing and fencing lots at planes,		526 50	526 50	1046 37		1572 87
Fences, and removing buildings, &c.	1530 45	574 98	2105 43	69 40		2174 83
Miscellaneous expenses,	2677 97	7370 10	10048 07			10048 07
Coal for engines,		2445 00	2445 00	1205 00		3650 00
Three locomotive engines,		2500 00	2500 00	16350 00		18850 00
Superintendent and engineer expenses,	37270 50	15271 50	52542 00	2451 00		54993 00
Steam engineers, &c. at planes do.		5813 23¾	5813 23¾	1668 07		7481 30¾
Riggers,		1474 87½	1474 87½	202 00		1676 87½
Loft for depot, and engine houses, &c.,				1600 00		1800 00
Depots, machine shops, water stations, &c.				25385 00		25385 00
Add for contingencies,				8000 00		8000 00
	$1,041,121 56	$403,587 84¾	$1,444,709 40½	$301,424 88	$3,368 88¾	$1,749,503 17¼

Amount of appropriations available for rail-road purposes $1,580,279 41.

Table showing the approximate [illegible]

[illegible]

First Year.

[illegible]

Repairs.

Second Year.

[illegible]

Repairs.

Incidental expenses, [illegible]

[illegible]

Repairs.

[illegible]

This excess of cost over the estimate of last year, as directed by the foregoing balance, has been caused by additions of work, the purchase of materials, and expenses attending the use of the stationary engines, which items were not included in the estimate of 1833. The following will account in a great measure for the excess: —

Ropes,	$20,531 00	Exp's at st. eng's,	$12,481 00
Repairs,	13,391 00	Locomotives,	18,850 00
Depots, &c.	25,835 00	Incidental,	8,000 00
	59,757 00		39,331 00
		Add	59,757 00
Total of new work, &c.			$99,088 00

The balance of the excess ($66,766 87) has been created by reason of the prices for work and materials being higher than those estimated by the engineer, in his estimate of last year. For a more full explanation on this subject, I refer the board to the accompanying report of Mr. Welch. I also refer the board to the annexed statement, which will show in detail the estimated cost of the rail-way; as also the amounts paid previous and since the last report, the amounts due and forfeited, and the sum yet required to pay for work under contract, and incidental expenses, &c. &c.

In the foregoing estimates of the cost of the rail-way, no allowance has been made for the expenses of the engineer department and that of Superintendent's office for the ensuing season—nor has any allowance been made for the expenses attendant upon the use of motive power, to be employed by the State during the year 1835. These items being distinct from those connected with contracts for materials and construction, I have reserved them for an especial estimate.

The principal engineer has estimated the expense of motive power upon the Portage during the year 1835, at seventy-nine thousand seven hundred and sixty-nine dollars, but this sum includes charges for interest on the cost of locomotives, and the creation of a fund for their renewal, &c. &c. The actual sum, however, according to this estimate, which will be liable to be expended, and which is to be provided by appropriation, should be, I presume, set down as follows:

Stationary Steam Engines.

Coal, 40 bushels per day—297 bushels equal 11,880 bushels at 4 cents,	$475 20
Oil, 75 gallons at $1,	75 00
Incidental expenses, including tar, tallow, rope stoppers, &c.	300 00
One engineer of machinery, $600 per annum,	600 00
One assistant do 297 days at $1,	297 00
One car tender at foot of plane, at $273 75 per annum,	273 75
One assistant do do at 75 cents per day,	222 75
One fireman at engine—297 days at 75 cents,	222 75
Expense of one plane,	2466 45
If we multiply this sum by	10
which is the whole number of planes, the aggregate expenses will be for one year, exclusive of rigger's charges,	24,664 50

Rigger's Loft.

One principal rigger, at $2 per day, 365 days,	$730 00	
Three assistant do. at 1 12½ per day, "	1,231 87½	
Incidental expenses at loft,	350 00	
		2,311 87½
Whole annual expense of 10 planes,		26,976 37½

Locomotive Engines.

One engine man, 297 days, at $2 per day,	$594 00
One assistant engine man, 297 days, at $1 per day,	297 00
Fuel at $4 per day, 260 days,	1,040 00
Oil, 75 gallons, at $1 00,	75 00
Repairs,	400 00
Annual cost of working one locomotive,	2,406 00
Multiply this by the number of engines constantly in use,	3
And the total cost will be,	$7,218 00

Repairs of two extra engines,	$ 800 00	
One additional engine man and assistant,	891 00	
Incidental expenses of locomotives,	600 00	
		2,291 00
Whole annual cost of five engines,		9,509 00

Horse Power.

Fifty-three horses, at 62½ cents per day,	$ 9,838 12½
Twenty-four men, (drivers,) at 75 cents per day,	5,346 00
Superintendence and contingencies,	800 00
Total annual expense of horse power on 14½ miles,	$15,984 12½
Expense of keeping water stations and depots, &c. in repair, &c. &c.	1,000 00

Recapitulation of the foregoing.

Annual expense of stationary steam engines & planes,	$ 26,976 37
" " five locomotives,	9,509 00
" " horse power,	15,984 12½
" " keeping water stations, &c.	1,000 00
The actual amount, therefore, that will be required for incidental expenses attending the motive power upon the Portage, should locomotives and horses be used, will be	$ 53,469 49
To this add estimated expenses of engineer department, &c. for the year 1835,	11,362 50
Add also estimated cost of two additional locomotives,	13,000 00
The amount to be added, therefore, to the sum heretofore mentioned as being required to complete the rail-way, (165,854 87½) will be	77,831 99
Making the entire sum required to be provided by future appropriations,	$ 242,686 86

As regards the motive power to be used upon the Portage, in relation to which the principal engineer has made a detailed report, I am of opinion that the Commonwealth should not become connected with the transportation in any way, beyond the provision of stationary steam power and locomotive engines. It is true, horse power must be used on the short levels between the several planes, but it is a matter worthy of inquiry, whether this power cannot be put in operation at a cheaper rate by the carrier than by the Commonwealth. In my opinion it can.

The hiring or purchasing of horses and the employment of drivers, are matters in which I conceive the State cannot be advantageously connected—and I am the more convinced of this by actual observation every day upon the rail-way. If the road consisted of but a single track, there might be a strong inducement for the Commonwealth to employ all the motive power in order to facilitate the transportation—to prevent interruptions, and to regulate the time of arrival and departure with greater certainty; but now as there will be two tracks in operation, the transporters might be left to their own discretion, being governed at the same time by the rules and regulations of the rail-way. If the cost of applying steam power, for one year, taking the maximum tonnage at one hundred thousand, be sixty-three thousand seven hundred and eighty-five dollars and thirty-eight cents, as estimated by the principal engineer, and we add to this fifteen thousand nine hundred and eighty-four dollars and twelve cents, estimated as the price for horse power, there will be required to be charged for *traction* alone, in addition to the tolls, seventy-nine dollars and eight hundredth cents on every ton transported from Johnstown to Hollidaysburg, and *vice versa.* It is obvious that it is the interest of the State to put the tolls at the lowest standard practicable, for the purpose of inducing transportation—hence the propriety of shunning the employment of any mean or power which may be expensive, and yet not absolutely advantageous or profitable. With these considerations I would suggest that the motive power employed on the levels, where locomotive engines are not used, be provided and employed by the owners of the cars, or those engaged in the carrying trade, under the directions of the agents of the State.

From the sum, therefore, of two hundred and forty-two thousand six hundred and eighty-six dollars and eighty-six cents, set down as the estimated amount required, I would deduct the allowance for horse power, fifteen thousand nine hundred and eighty-four dollars and twelve cents, and fix the amount necessary to cover all expenses, &c. connected with the entire completion of the rail-way, and furnishing motive power by stationary and locomotive engines, at two hundred and twenty-six thousand seven hundred and two dollars and seventy cents.

The number of persons employed upon the several inclined planes, amounts to forty, and at the rigger's loft to five. Their names and stations, as well as those of the engineer corps, will be found in detail in table No. 22, of the documents accompanying this report.

The tables, numbered from 1 to 21, inclusive, will afford the board, I trust, the most ample information on all subjects connected with the immediate construction of the rail-way.

Of the awards made by the board for damages done by reason of the grading, &c. of the Portage, the following persons have accepted :

Thomas Croyle,		$190 00
Isaac Hildebrand,		30 00
Willis Gibbony,		25 00
		245 00
The following awards have been rejected :		
Samuel Duncan,	$80 00	
W, Hileman,	60 00	
Samuel S. Smith,	55 00	195 00
Total amount of damages allowed,		$440 00

The several lots to be attached to the houses, or dwellings at the planes, have been surveyed and plotted, and the several diagrams will shortly be transmitted to the board. Titles to these lots generally cannot now be had, as conflicting claims render some of them uncertain, and others are in the hands of executors or guardians.

Respectfully submitted,
S. JONES, Superintendent,
Allegheny Portage Rail-Road.

Rail-way office, Hollidaysburg,
November 1, 1834.

No. 4.

Report of Sylvester Welch, Engineer.

Engineer's Office,
Johnstown, October 30th, 1834.

To Samuel Jones, Esq.
Superintendent of the Western Division of the Pennsylvania Canal and Allegheny Portage Rail-road.

Sir—In obedience to instructions from the Secretary of the Board of Canal Commissioners, dated the tenth day of October inst., directing a report to be made of the state of the public works, &c. on the Allegheny Portage rail-road and the Western and Juniata divisions of the Pennsylvania canal, I have the honor to submit the following report of the condition of the work, &c. upon the Portage rail-road.

The grading for the rail-road was finished, with the exception of one section, previous to the date of my report of November last. This section was finished as far as circumstances would permit, and the contractor discharged on or about the 1st of December. The annexed schedule, marked No. 1, shows the amount of work of every description executed under each contract for grading, with the cost of each item, &c.

The aggregate cost of grading, and of work done under contracts for grading, amounts to		$472,349 03¼
All the masonry executed under contracts for building viaducts, culverts and bridges, is finished: the annexed schedule, marked No. 2, shows the amount of work done under each contract for building viaducts, and the schedule marked No. 3, shows the amount of work executed under contracts for building culverts and bridges.		
Aggregate cost of viaducts,	$79,755 80½	
do, " culverts,	34,319 39¾	
do. " bridges	2,327 44	
Work done under contracts for masonry,		116,402 64¾
Cost of grading and masonry,		$588,751 67½

Rail-way Superstructure—1st track.

All materials furnished and work done under contracts entered into prior to the 22d of April last, for supplying materials and laying rail-way, are included in the cost of the first track. Both tracks upon the inclined planes, and so much of the second track upon the levels as was deemed necessary for passing places for cars, (or so much as rails could be obtained to make,) are included in this general item.

All the contracts for furnishing materials and laying rail-way for the first track, are finished, and final estimates have been reported to the superintendent for all, except those for the transportation of iron. These have been deferred, in consequence of a discrepancy between the receipts given by the contractors to the Commonwealth's agent in Philadelphia, and those furnished by the contractors for iron delivered on the rail-road. The cause of this discrepancy is not yet ascertained.

Schedules marked No. 4, 5 and 6, show the amount of work done and materials furnished under each contract for laying rail-way superstructure, furnishing stone blocks, and furnishing timber.

Aggregate expense of work done under contracts for laying rail-way, first track,	$ 135,776	26½
Aggregate expense of work done and materials furnished under contracts for furnishing stone blocks,	27,072	15¼
Aggregate expense of work done and materials furnished under contracts for furnishing timber,	47,184	50
Cost of iron rails, pins, wedges and chairs, (English iron,) at Philadelphia,	116,268	17
Estimated cost of transporting rails, pins, wedges and chairs, from Philadelphia to the rail-road,	52,100	
Cost of American chairs and other castings furnished for the first track,	52,315	50¾
	$ 430,716	59½

In my last annual report, the rail-way superstructure for the first track was estimated to cost four hundred and sixty thousand one hundred and forty-two dollars eighty and one-fourth cents, which is twenty-nine thousand four hundred and twenty-six dollars twenty and three-fourth cents more than the amount paid for the work and materials.

The estimate of last year included the cost of several turn-outs which are not made, and which will be included in the estimate for the second track, also a quantity of castings, which will be included in the same account.

Engine houses, Walls for Engines, Dwelling houses for Engine tenders, &c.

The contracts for building engine houses and sheds, walls for engines and dwelling houses for engine tenders, are completed, and final estimates have been reported to the superintendent.

The contracts for boring wells and laying water pipes, are all finished except the well and water pipes at inclined plane No. 10, and final estimates have been reported.

Schedule marked No. 7, exhibits the amount of work done under contracts for building engine houses and sheds, walls for engines, dwelling houses for engine tenders &c., boring wells and laying water pipes, &c. &c. Schedule marked No. 8, shews the amount of work done and materials furnished under contracts for furnishing steam engines and machinery.

Aggregate expense of work done under contracts for building engine houses and sheds, dwelling houses for engine tenders, &c., wells, water pipes, &c. &c., as per schedule marked No. 7,	$66,640 49
Aggregate expense of stationary steam engines and machinery connected with them—first set, as per schedule No. 8,	64,968 00¼
Aggregate cost of the first set of ropes, including two spare ropes,	20,314 81
Cost of engine houses and engines and machinery, &c. including ropes,	$151,923 30¼

Schedule marked No. 9, shews the amount of fence made and removed, &c., on the sections. Schedule marked No. 10, exhibits the amount of work &c. done under contracts for building weigh scales and sheds, weigh-master's houses, rigger's loft, &c. &c.

Aggregate cost of fencing,	$2,150 43
Estimated cost of work done under contracts for building weigh scales & sheds, weigh-master's houses, rigger's loft, &c. &c.	9,715 05

Rail-way superstructure—Second track.

The materials for the second track are nearly all delivered on the rail-road, except the rails, pins and wedges—a portion of these have been delivered within the last twenty days. About twelve hundred tons of rails, and a corresponding quantity of pins and wedges, will probably be furnished within the next ten days.

The greatest part of the stone blocks are laid, and stone are broken for the horse path and for ballasting the road.

If the rails are delivered before the water is withdrawn from the canals, or before the setting in of winter, the whole of the second track can be finished and ready for use before the opening of the canals in the spring. The rails which are now furnished, are being laid on portions of the rail-road where a double track is most necessary.

The following specification, shews the manner of constructing the second track of the rail-road:

The width of the track, or the distance between the rails will be four feet nine inches, and the distance between the tracks, including the width of the inner rail of each track, five feet.

The level parts of the rail-way (technically levels,) are to be formed of edge rails formed of malleable iron. These rails are to be eighteen feet long, they are to be secured to blocks of stone marked in the drawing A, by cast iron chairs marked C, except on the high embankments on sections Nos. 11, 29, 39 and 42.

On the high embankments the chairs are to be secured to pieces of timber (locust,) placed cross-wise of the track, supported either by broken stone or by other pieces of timber placed longitudinally.

The turnouts are to be formed of timber (white oak,) six inches wide and eight inches deep, covered with bars of iron two and a fourth inches wide and five-eighths of an inch thick, to be called plate rails. These timbers are to be placed upon and secured to pieces of locust timber placed cross-wise of the track at intervals of four feet.

The rail-way between the planes is to be laid so as to correspond vertically with the grade adopted for the road, and it must in all cases be laid so as to form horizontally arcs of circles or their tangents.

In all places where stone blocks are used and a permanent rail-way laid down, a ditch is to be excavated under the line of each rail, two and a half feet wide and eighteen inches deep. These ditches are to be connected at intervals of fifteen feet by cross-ditches one foot wide and one foot nine inches deep.

The side ditches are to extend to the side of the road bed in all places where the surface of the ground immediately adjoining is two feet below the surface of the road bed. But where the surface of the ground on both sides of the rail-road is less than two feet below the surface of the road bed, a ditch is to be cut along the centre of the road, between the tracks, two and a half feet wide and two feet deep, and the cross ditches are to be so cut as to communicate with a drain to be placed in the centre ditch, and all communication with the side ditches of the road is to be cut off.

Stones of such quality as may be directed by the engineer are to be finely broken at some point or points not on the bed of the road, so that the largest pieces shall not exceed three and a half cubic inches, or weigh over six avoirdupois ounces. The stones are to be placed in the ditches under the lines of the rail in layers of four inches thick or deep, to the depth of one foot; each layer is to be well packed with a ram or maul before the succeeding layer is put on; the cross ditches are to be filled with broken stone to the depth of one foot, but without packing. The centre drain, wherever required, is to be constructed in the manner represented in the drawing.

The ditches under the lines of rail are to be made even on the sides and bottom; they are to be excavated in parts not less than four hundred feet long; and before any stone is put in, the engineer or assistant engineer shall examine them, and if found of sufficient depth and width, the contractor shall put in the first layer of four inches of broken stone on the whole length of the ditch so excavated; and pack it down as required above; the second layer shall also be put in on the whole length of the portion of the ditch excavated and packed down before any portion of the third layer is put in.

The stone blocks (marked A in the drawings) are to be one foot deep, two feet long, and one foot nine inches wide; those marked X are to be one foot thick, and one foot six inches wide, and seven feet long. They are to be formed of strong sand stone or lime stone, or such other strong stone as shall be approved of by the engineer; they are to be dressed with the hammer and pick, so that the sides shall be at right angles to and parallel with each other. The portion of the upper surface of each block upon which the chair rests, is to be cut smooth, so that the base of the chair shall rest with its whole surface upon the stone. The holes for the locust pins are to be six inches deep, and one and a half inches in diameter.

The wooden pins (marked A in the drawing) are to be made of seasoned locust timber; each pin is to be six inches long and one and a half inches in diameter; they are to be turned smooth, and each pin is to be pierced in the direction of its length, through the centre, with a hole one third of an inch in diameter: they are to be driven firmly into the stones.

The cast iron chairs (marked C in the drawings) are to be secured to the stone blocks, each by two spikes (marked C in the drawings) driven firmly into the pins A. The spikes C are to conform in every respect to the model now exhibited, and to be kept in the engineer's office; also in the office of the superintendent. They are to be made of the best quality of Juniata iron.

The chairs, and wedges to fasten the rails in the chairs, are to have the form and dimensions represented by the model in the engineer's office. The chairs are to be made at a foundry of the best quality of cast iron. The wedges for the inner side of the rail are to be made of malleable iron; those on the outer side of the rail are to be made of seasoned locust timber.

The contractor for furnishing chairs shall deliver his pigs at the foundry in quantities of not less than twenty tons, and the pigs so delivered shall be examined by the engineer, or by some person appointed by him, and approved of before they are used. The chairs will be examined at the foundry before they are delivered to the Commonwealth, and if found to be in any respect imperfect, they will not be received. The pins and iron wedges will also be examined at the manufactory by the engineer, or by some person appointed by him, and approved of before they are received by the agent of the Commonwealth.

The stone blocks (A) are to be placed upon the broken stone in the ditches, under each line of rail, at intervals of three feet, measuring from centre to centre of blocks, in the straight parts of the road, and in all curves whose radius exceeds 955 feet. In curves of less radius than 955 feet, a long block (X) is to be placed across the track at every nine feet: blocks (A) are to be placed between these in the same manner as upon other parts of the road.

All the blocks are to be placed with the longest side across the road. The upper surface of each stone shall be parallel to a plane corresponding with the grade of the rail-way; and the bed upon which it rests shall be raised or depressed accordingly. The rails are to be secured in the chairs by wedges, as represented by the models and drawings.

After the stone blocks are placed, and the rails secured, broken stone is to be placed around the blocks, and upon the surface of the road, until the whole is raised to a level with the top of the stone blocks; the broken stone to be packed with a ram or maul, in the same manner as those placed in the ditches. The whole surface of the road is to be made smooth; and the side ditches are to be kept clean at the expense of the contractor, unless in case of large slips.

On the high embankments on the sections above mentioned, the graded surface of the road is to be raised, where necessary, by the addition of new embankment, which the contractor for laying the rail-way will be required to put on. A line of timber, if required by the engineer, is to be placed in a ditch under each rail, to support the cross timbers (marked E.) The cross pieces are to be locust timber, six inches wide and eight inches deep and seven feet long. They are to be placed at intervals of three feet, either upon the timbers above mentioned, or upon the ground; if upon timbers, they are to be secured at each end with a locust pin one inch in diameter.—The cast iron chairs are to be spiked to these cross pieces, and the rails are to be secured in the same manner as upon the permanent part of the road. A horse path is then to be formed of gravel or of broken stone, in such manner as may be directed by the engineer. Turn-outs are to be made from both tracks, at such points as the engineer may direct. They are to be made in the manner described above. The castings for the crossings will be furnished by the Commonwealth. The contractor will be required to fit them, by chipping, filing or grinding, so that they may work smoothly, and fit the parts of the rail-way with which they connect.

The plate rails for the turn-outs and for the rail-way along the basins are to be not less than fifteen feet long. The holes through which the spikes are driven to secure them to the timbers, are to be elliptical; they are to be three-eighths of an inch wide and five-eighths of an inch long. The hole at each end is to be one inch from the end of the bar, and the intervening holes are to be not more than eighteen inches apart. The upper side of each hole is to be cut away or enlarged, so as to receive the head of the spike. The spikes are to be three-eighths of an inch in diameter, and four inches long. A plate of malleable iron, of the size and form heretofore used on the Portage rail-road, is to be put under the ends of the rails. The spikes that secure the ends of the plate rails are to pass through the holes in the small plates. Both the plate and the edge rails when laid are to have a space between the ends, to be regulated by the engineer:

it will vary with the temperature of the atmosphere, from zero to one-eighth of an inch. The spikes are to be driven through the plate rails in such manner as to allow for the expansion and contraction of the iron. Two tracks are to be laid along the basins at Hollidaysburg and Johnstown. The rail-way is to be formed in the same manner as that for turnouts and sidings, viz: white oak rails laid upon locust cross sills, and covered with plate rails; the cross sills are to be laid upon broken stone, if directed by the engineer. All the materials used in the construction of the rail-way are to be examined by the engineer, or some person appointed by him, and approved of before they are used. All the mechanical work is to be done in the best manner; and any mechanic, or other person, who performs his work imperfectly, will be immediately dismissed. Materials delivered at or near the rail-road, for the use of the same, which may be deemed unfit for the purposes for which they were delivered or procured, shall be removed, if ordered by the engineer, to such distance as he may deem requisite, to prevent their being put into the work in his absence. And no estimate will be made for the work done by any contractor, who shall refuse or neglect to remove such condemned materials, until the requisition shall be complied with, or the contract forfeited.

The edge and plate rails, chairs, iron wedges, pins and spikes will be furnished by the Commonwealth to the contractors, at such points on the rail-way as the superintendent may deem most convenient.

The schedule marked No. 11, exhibits the amount of work done under contracts for furnishing materials and laying the second track of rail-way for the Portage rail-road.

Estimated cost of laying the second track, including the expenses of all materials to be furnished under the contracts for laying rail-way, as per schedule No. 11, $169,934 23

Estimated cost of rails delivered on the rail-road,	$122,300 00
Estimated cost of pins and wedges delivered, &c.,	10,752 00
Estimated cost of iron chairs and other castings,	32,950 00
	$ 166,002

The schedule marked No. 12, shews the estimated amount of work done and to be done, under contracts for building houses, &c, for the second set of engines.

Estimated cost of houses, walls, &c. for the second set of engines, $17,895 32

The second set of stationary engines, which are now nearly finished and ready to be put up, are constructed upon the same plan as the first set, except that they are made stronger, and are better secured upon the walls. The second set of engines at planes No. 6, 7 & 8, have each four boilers of thirty inches diameter, and twenty feet long. The other engines have each three boilers. The schedule marked No. 13, exhibits the estimated cost of each engine when put up and ready for use, including bed plates, and all fixtures.

Estimated cost of the second set of stationary engines for the inclined planes on the Portage rail-road,	$39,425 00
The schedule marked No. 14, shews the estimated cost of clearing and fencing lots at the inclined planes,	1,572 87

The depots at each end of the rail-road, and the water stations directed by a resolution of the board, dated August 25, 1834.

A lot at each end of the rail-road has been laid off for a depot, as directed by the resolution of the board dated August 25th, 1834, and plans for engine houses, machine shops, smith and carpenter shops, and water stations, have been made, and a part put under contract. The following is the estimated cost when completed, according to the plan:

Estimated cost of depot at Johnstown, including engine house, work shops, turnouts, turning platforms, side rail-road, &c.,	$9,535
Water station, and engine shed at the tunnel,	2,000
Turnout at foot of plane No. 1,	400
Water station, turnout and engine shed at the foot of plane No. 2,	950
Depot at Hollidaysburg, including workshop, side railway, turnouts, turning platforms, &c.,	7,500
Smith shop at summit,	1,000
Estimated cost of depots, workshops, &c.,	$21,385
Small engines, lathes, tools, &c. for workshops,	4,000
	$25,385

Estimated cost of the Portage rail-road including the cost of depots, water stations, work shops, engines and machinery for work shops, &c. &c.,

Grading and masonry,	$588,751 67½	
Cost of first track, including work done and materials furnished under contracts made previous to 23d April,	430,716 59½	
Cost of buildings, engines, machinery, ropes &c. for inclined planes,	151,923 30¼	
Cost of fencing and removing buildings, &c.,	2,174 83	
Cost of riggers loft, weigh scales and sheds and weigh masters houses, &c.,	9,765 05	
		1,183,331 45¼

Second Track, including depots, &c.

Estimated cost of laying the second track, including cost of stone blocks, timber, &c. &c.	$169,934 23	
Estimated cost of rails delivered on the rail road,	122,300	
Estimated cost of pins and wedges delivered on the rail-road,	10,752	
Estimated cost of iron chairs and other castings delivered,	32,950	
Estimated cost of engine houses, &c. for the second set of engines,	17,895 32	
Estimated cost of the second set of stationary engines,	39,425	
Estimated cost of clearing and fencing house lots at inclined planes,	1,572 87	
Estimated cost of depots, work shops, &c.,	25,385	
Add for contingencies,	8,000	
		428,214 42
Estimated cost when completed with a double track, two sets of stationary engines, depots, work shops, with the necessary machinery and fixtures for repairing stationary and locomotive engines, &c. exclusive of office expenses and office pay,		$1,611,545 87½

The estimate made in November last, of the cost of the rail-road when completed, exclusive of office expenses, &c. was one million five hundred and twenty-six thousand and twenty-nine dollars and forty-two and three-fourth cents. This estimate did not include the weigh scales, weigh masters houses, nor the depots, work shops and water stations, as no direction had been given by the board, for the construction of works connected with the transportation, or of work-shops for the use of the rail-way.

The rails for the second track have cost considerably more than they were estimated to cost last fall. The stationary engines have cost about five thousand dollars more than the estimates and more than the first set. The prices paid for some parts of the work are considerably higher than were deemed fair prices, particularly those for stone blocks and broken stone.

In my last annual report, I made an estimate of the expense of the stationary engines for this season, which amounted to forty-one thousand, six hundred and sixty-six dollars and fifty cents. Also an estimate of the cost of repairs to the rail-road, which amounted to fourteen thousand five hundred dollars, making together fifty-six thousand one hundred and sixty-six dollars and fifty cents. For this no appropriation was made by the Legislature. The expenses of the stationary engines have been paid by the superintendent out of the construction fund, and also the expenses of repairs up to the 10th of July, when the supervisor entered upon his duties.

The first track was opened for transportation on the 18th of March. There were then about twenty-five cars upon the road, and ready for use; on the 1st of April there were about fifty, and on the 15th of April about eighty. These were inadequate to accommodate the trade, and a large quantity of merchandise was conveyed in wagons from Hollidaysburg to Blairsville, and sent thence by the canal to Pittsburg.

The transportation has been carried on by companies and individuals, who have furnished their own cars and horses. The Western transportation company have arranged their horses so as to have three relays between Johnstown and Hollidaysburg. All the other companies and individuals engaged in transportation, except for the passenger cars, have one set of horses go through; they generally make a trip across the rail-road and back in three days, making the distance travelled seventy-two miles. The price paid to owners of horses, when they are hired, is from one dollar to one dollar and twenty-five cents per ton carried over the rail-road, the transporters to furnish cars, oil, &c. and pay the toll. A number of horses are attached to a train of cars, sufficient to draw them up the steepest grades. These horses pass over the whole rail-road. On the level parts of the road and where the inclination does not exceed ten feet and a half in a mile, which is the grade on a large proportion of the rail-road; they pass over the distance with less than half a load, and they pass up and down the inclined planes without performing any effective labor. By this system of management nearly three times as many horses are employed as would be required if they were stationed upon the different levels, and made to perform a certain number of trips backward and forward, between the inclined planes.

In addition to a great increase in the expense, the present plan of furnishing motive power for the rail-road produces delay and serious inconvenience to the trade and travel. No two persons are willing to start at the same time or travel at the same rate of speed; one will travel at the rate of four miles per hour, another at three, &c. One man will feed his horses at one place, another goes a mile or two farther. In this way cars will be interrupted on every mile. The impossibility of compelling cars to start at a certain time, and travel at a fixed rate of speed, when the convenience and interest of so many persons are concerned, has been fully proven by the experience of this season.

In compliance with the directions of the canal commissioners, I have made the following estimate of the cost of motive power for the rail-road during the next season, to be furnished by the Commonwealth:—

Estimated cost of motive power for the transporting season of 1835, to commence on the 10th of March and terminate on the 31st of December, including expense of stationary steam engines, locomotive steam engines on the first and second levels from the western end of the rail road, and horses power upon the remaining levels.

The number of tons of merchandize, produce, &c. assumed as the quantity to be carried in each direction is fifty thousand, equal to one hundred thousand tons to be conveyed over the rail-road.

Stationary Steam Engines.

Coal, 40 bushels per day, 297 days equal 11,880 bushels, at four cents per bushel	$475 20
Seventy-five gallons of sperm oil, at $1,00,	75
One engineer of machinery, at $600 per annum,	600
One assistant 297 days, at $1 per day,	297
One fireman " at 75 cents per day,	222 75
One man at the foot of the plane, at $273 75 per annum,	273 75
" " " at 75 per day, 297,	222 75
Wear and tear of ropes, equal to three-fourths the expense of a new rope,	1,480
Incidental expenses, including tar, tallow, rope-stoppers, &c. &c.,	300
Expense of a plane of medium length,	$3,946 50
Multiplied by the number of planes,	10
Aggregate expense of ten engines, exclusive of rigger's expense,	$39,464 50

Rigger and Assistants.

One rigger, 365 days, at $2 00 per day,	$730	
Three assistants, 365 days, at $1 12½ per day,	1,231 87½	
Incidental expenses for rigger's loft,	350	
Expenses for riggers, rigger's loft, &c.,		2,311 87½
Aggregate expense of the ten inclined planes,		$41,776 37½

Locomotive Steam Engines,

To be used on the first and second levels on the western end of the rail-road:

Two locomotive engines will be required for the first and three for the second level—of these, one will be constantly in use on the first, and two on the second level.

One engine man 297 days, at $2 00 per day,	$594 00
One assistant 297 days, at $1 00 per day,	297
Fuel, $4 00 per day, 260 days, (working days,)	1,040
Grease, oil, &c.,	75
Annual expense of repairs,	400
Interest on cost of engine, about	400 00
Annual cost of working one engine,	$2,806 00
2,806 00 multiplied by 3, the number of engines constantly in use,	$8,418 00

Interest on the cost of two extra engines, about	$800	
Repairs of two extra engines,	800	
One additional engine man and assistant,	891	
Incidental expenses of locomotive engines,	600	
		3,091 00
Expense of locomotive power on seventeen miles,		$11,509 00

Or two-thirds of a cent per ton per mile.

The engines included in the above estimate, will transport about twenty-five per cent. more than is here assumed as the business of the season.

Horses Power,

To be used on the levels, between the head of inclined plane No. 2 and Hollidaysburg—aggregate distance, fourteen and one-fourth miles:

Each set of horses will work upon one level, and make a certain number of trips from the head of one plane to the foot of the succeeding one and back, each day.

Between planes No. 2 and 3	—1.60 miles,	4 horses,	2 men.
" " No. 3 and 4	—1.90 miles,	6 horses,	3 men.
" " No. 4 and 5	—2.50 miles,	8 horses,	4 men.
" " No. 5 and 6	—1.50 miles,	4 horses,	2 men.
" " No. 6 and 7	—0.16 miles,	1 horse,	1 man.
" " No. 7 and 8	—0.63 miles,	2 horses,	1 man.
" " No. 8 and 9	—1.25 miles,	4 horses,	2 men.
" " No. 9 and 10	—1.75 miles,	6 horses,	2 men.
" " No. 10 and Hollidaysburg,	3.00 miles,	18 horses,	7 men.
		53 horses,	24 men.

53 horses at 62½ cents per day,	$9,838 12½
24 men (drivers) at 75 cents per day,	5,346 00
	$15,184 12½
Superintendents and contingencies,	800
Expense of horse power on $14\frac{1}{4}$ miles, or $1\frac{12}{100}$ cents per ton per mile,	$15,984 12½

The expense of horse power is very much increased, in consequence of the road upon which the horses work being divided into spaces of unequal length by the inclined planes. In order to avoid delay, more horses, &c. are allowed on most of the levels than would be required to perform the labor, if the whole day was allowed to do it in.

Estimated expense of stationary engines and machinery exclusive of interest on the original cost, and a fund for renewing,	$41,776 37½

Estimated expense of locomotive engines on 17 miles of rail road, including interest on the original cost, expense of repairs, &c. &c.	$11,509 00
Estimated expense of horses power on the short levels—aggregate length, 14¼ miles, including drivers, superintendents, &c.,	15,984 12½
Estimated expense of motive power for the transportation of 100,000 tons,	$69,269 50

If a charge is made for motive power, separate from the ordinary toll, that charge should include a fund for renewing stationary and locomotive engines, and a sum sufficient to cover the expenses of attending to the depots and water stations, and of keeping them in repair. In the estimate of horse power, horses are supposed to be hired to perform a certain number of trips per day, and the price allowed, viz:—seventy-five cents for each driver, and sixty-two and one-half cents for each horse—is intended to cover all the expenses of horses and drivers, including food for horses, wear and tear of harness, &c. No provision is therefore required for replacing or renewing these.

The charge per ton for motive power, for the whole length of the rail-road between the weigh scales, will be as follows:

Expense of stationary and locomotive engines, horse power, &c., &c.,	$69,269 50
Fund for renewing stationary engines, and machinery connected with them,	5,500 00
Fund for renewing five locomotive engines and tenders,	4,000 00
Expense of attending to, and keeping depots and water stations in repair, &c., &c., &c.,	1,000 00
Amount to be charged for motive power,	$79,769 50

Seventy-nine thousand seven hundred and sixty-nine dollars and fifty cents, divided by one hundred thousand tons, equals seventy-nine and eight-tenth cents nearly, as the cost of motive power for transporting one ton, from the weigh scale at Johnstown to the weigh scale at Hollidaysburg, or *vice versa.* Of this, forty-one thousand seven hundred and seventy-six dollars and thirty-seven and a half cents, is for annual expenses of stationary engines, and fifty-five hundred dollars as a fund for renewing stationary engines; making the expense of motive power upon the level parts of the rail-road, thirty-two thousand four hundred and ninety-three dollars and twelve and a half cents. This, divided by one hundred thousand tons, gives thirty-two and a half cents as the cost of motive power to transport one ton over the level parts of the Portage rail-road.

All which is respectfully submitted.

SYLVESTER WELCH, Engineer.

Eastern Division.

No. 5.

Report of John C. M'Allister, Superintendent.

To the Board of Canal Commissioners:

Gentlemen:—In obedience to your instructions of the 10th October, 1834, received through your secretary, I beg leave to submit the following report upon the Eastern division, for the present year:

It gives me pleasure to state, that all the contracts which were in progress on the Columbia line, at the time of the last annual report, have been completed, and the business connected with the old work generally settled.

The condition of the whole line under my care, during the past year, has been such as to give the strongest evidence of its permanency. Breaches, and interruptions in the navigation, have been but few. The principal breach took place at Bainbridge: about one hundred feet of the outside wall of the canal fell down, on account of which, and the want of water in the canal, the navigation was interrupted for the space of five weeks.

From the amount of work done during the present year, together with the names of contractors, whole cost of the work, amount required to finish, together with damages paid, &c., I beg leave to refer you to the subjoined tables.

In accordance with a resolution of the board of Canal Commissioners, contracts were entered into for the constructing the Swatara feeder and dam therefor, and building a collector's office at Columbia.

The principal works on the feeder, as contracted for, are, a dam and three sections. The work commenced on the first day of September last, and it is confidently expected that it will be completed by the opening of the spring navigation. For its location and dimensions, I refer you to the report of the engineer.

By a reference to the documents herewith submitted, you will perceive that the amount of damages paid on this division during the present year, up to the date of this report, is nineteen thousand five hundred and eight dollars and thirty cents; of which was paid, upon decisions of the Supreme Court, eighteen thousand one hundred and thirty-six dollars and thirty cents; upon offers of the board, five hundred dollars; and upon awards of appraisers, eight hundred and seventy-two dollars.

The engineer has reported the amount required to complete the works under contract, on the Eastern division, to be as follows, to wit:

Amount required to finish the feeder,	$16,912 65
" collector's office at Columbia,	2,088 00

To wharf west side of basin at Columbia,	$700 00
Contingent and unforeseen expenses on E. D.,	2,500
	22,200 65
To which add per centage due contractors,	2,966 37
Final estimate due Nice & Caldwell, contractors for the out-let locks at Columbia,	1,594 00
Fencing yet to be made,	500 00
J. B. Haldeman, to remove stone,	150 00
Total amount required to finish the work on the E. D.	$27,411 02
Unexpended balance of "old funds," on hand,	612 69
Ditto for new work upon "old lines," (per February 16, 1834,)	1,646 54
	2,259 23
Ditto of "new fund,"	828 55
Amount of balances on hands,	3,087 78
Balance required to complete the works on the E. D.,	$24,323 24

Respectfully submitted,

JOHN C. M'ALLISTER,

Superintendent.

Canal Office, Columbia,
October 31st, 1834.

ABSTRACT.

Amount of moneys in hands at the last report, out of the appropriations for "old work,"	$3,157 15	
Amount drawn from the fund for new work upon old lines, of the appropriation of February 16th, 1834,	12,000 00	
		$15,157 15
Amount expended, as per table No. 1, from November 1st, 1833, until October 31st, 1834,	2,544 46	
Amount expended as per tables No. 3, 9, and 11, from November 1st, 1833, until October 31st, 1834,	10,353 46	
		12,897 92
Balance in hands of old work fund, and for new work upon old lines,		$2,259 23

Unexpended balance of appropriation for new work, from November 1st 1833, until October 31st, 1834,	15,160 90	
Expended as per tables No. 2, 5, 8 and 10, from November 1st, 1833, until October 31st, 1834,	14,332 35	$828 55
Whole amount of moneys in hands, of old and new work funds and for new work upon old lines,		3,087 78
Amount of moneys in hands at the last report, out of the damage fund,	280 00	
Amount drawn from same fund since last report,	21,500 00	
		21,780 00
Amount of damages paid from 1st November, 1833, until October 31st, 1834,		19,508 30
Balance on hands,		$2,271 70

No. 6.

Report of E. F. Gay, Engineer.

Engineer Department, Lancaster,
November, 6th, 1834.

To the Board of Canal Commissioners of Pennsylvania:

Gentlemen—In consequence of my duties as engineer having (in the early part of the present year) been extended over the Eastern, Susquehanna and Delaware divisions of the Pennsylvania canal, I herewith transmit to you my report on the retrospective and present situation of these several lines.

Eastern Division.

The only new works in the progress of construction on this division, at the time it was placed under my charge, were the out-let locks at Columbia, which were completed in the summer, and are now in a good condition for passing boats.

The navigation of the line from Portsmouth to Columbia, has been much interrupted during the latter part of the season, by a deficiency in the supply of water from the dam at Clark's Ferry. This deficiency, however, will not probably again occur, as the feeder from the Swatara, which was placed under contract in July, will be finished in time to meet the wants of an early spring navigation. The collector's office at Columbia will be completed early in the winter, and the wharfing of the west side of the Columbia basin will be done as soon as the water can be withdrawn from the canal. An estimate of the above works has been furnished to the superintendent, and will form a part of his report.

The precarious situation of the eastern span of the bridge at Duncan's Island, during the summer, suggested the design of building a pier for its support, in the centre, which work was accomplished in the month of September, and will undoubtedly affect the safety of a structure which is of great importance to the navigation at that place. A few canal bridges on this division are in an unsafe condition, and should be re-built during the suspension of navigation in the coming winter.

Susquehanna Division.

The navigation on this division has met with few interruptions since its commencement in the spring. Some difficulty was experienced in consequence of a deficiency in the supply of water from the Shamokin dam during the latter part of August; a few days' work, however, expended in gravelling the dam and partially closing the sluice, soon restored the navigation, and the division has since been preserved in excellent order. Feeder sluices around several of the locks and a guard embankment on the west side of the Shamokin guard lock, appear to be the only works necessary to place this division in a perfect condition, both of which are about being commenced, and will probably be finished early in December.

Delaware Division.

This line of canal has continued in good navigable order throughout the past season, no interruptions having occurred on it worthy of notice. The abundance of excellent material which is obtained along the line, and constantly used in the repairs, is well calculated to render it in a few years (the mechanical work excepted) one of the most permanent canals in the State.

In consequence of the foundation of the Lehigh feeder dam being partially undermined, by which its safety was rendered doubtful, a new breast has been built to the dam, the cribs of which were sunk in sixteen feet depth of water. The work was completed in the latter part of August; it is substantially executed, and will, it is believed, secure the permanence of this important work, which is indispensably necessary to the whole line of canal.

The water furnished by the Lehigh, and the water wheels at Well's Falls, has been barely sufficient to feed the canal between New Hope and Bristol, during the low water in the summer, and may well be doubted if a sufficient quantity can be obtained by the same means to supply the future wants of a more active trade, which should be provided for, and which I cannot hesitate to suggest as a matter of importance, worthy of the consideration of the board.

A large number of the road and farm bridges on this division are in a ruinous condition, and many of them may be considered dangerous to cross; two have already fallen, and with each a team of horses, with the driver, wagon and load, were all precipitated into the canal together, doing considerable damage in both instances. It is confidently hoped that some provision will be made during the ensuing winter, for the re-building of several of the most defective of these bridges, without which their fall, with the consequent loss of property, if not of lives, may reasonably be expected.

In closing this report, I have only to add that, on a recent examination of the several lines of canal under my charge, I found their condition such, as enables me with confidence to assure the board, that nothing but extraordinary accident will prevent them from being in excellent order for the opening of an early navigation in the ensuing spring. Very respectfully submitted.

EDW'D F. GAY, Engineer.

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Juniata Division.

No. 7.

Report of J. K. Moorhead, Superintendent.

Canal Office,
Huntingdon, November 1, 1834.

To James Clarke, Esq.
President of the Board of Canal Comm's. of Penn.

Sir:—In compliance with the directions of your secretary, I have the honor to submit the following report.

The Juniata division was opened for navigation from Frankstown to the mouth of the river, (or its junction with the Susquehanna canal,) on or about the 6th March. Two miles from Frankstown to Hollidaysburg, was not ready until the 12th March, owing to some unfinished work at the weigh-lock and public slips. Since that period, the navigation has not been suspended twenty-four hours at any one time, on the Frankstown line.

The Huntingdon and Lewistown, or old lines, have been less fortunate, owing, no doubt, to their not having been so well constructed. There were a few breaches, but not any of great extent: and the whole division has generally been in excellent condition. The breaches were very promptly repaired by the supervisors, (of the old lines,) and the navigation but little interrupted. The line is now in good order, and will not require any great amount of repairs during the winter. For the details, I beg leave to refer you to the report of the engineer, herewith submitted.

There has been thirteen thousand five hundred and eighty-four dollars and forty-nine cents ($13.584 49) disbursed on the Huntingdon and Lewistown, or old lines, during the past year. This sum was paid, in compliance with acts of the last Legislature, to Jonathan Leslie, Bishop & M'Coy, Charles O'Donnell & Son, and for fencing, for a lock-house at lock No. 29, for an addition to the collector's office at Lewistown, for a lock-house lot, and for printing. (old bills,) For particulars see the following table :

To whom paid.	*Kind of work.*		*Amount.*	
Bishop & M'Coy,	Aqueduct at Jacks,		$4, 07	62½
Jonathan Leslie,	do.	at Sheaffer's ford	6,441	50½
Charles O'Donnell & Son,	Sect. 10, Lewistown line,		110	60
Jesse D. Elliott,	Fence on sect.	88, 89 & 90,	263	12
Benjamin Elliott,	do.	" 179 and 180,	368	
Mary Coulter,	do.	" 129,	22	77
Joseph A. Bell,	do.	" 130,	120	80
John Norris,	do.	" 2 and 3,	148	
Jacob Miller,	do.	" 173,'4,'6,'8 & '9,	1193	20
Jacob Miller,	Lot at lock No. 33,		50	
Lewis Owens,	Partition, &c. in collector's office,		44	12
King & Glazier,	Lock-house, lock No. 29,		286	75
W. B. & J. Underwood,	Advertising,		6	50
D. W. Hulings,	do.		21	50
Total amount disbursed last year,			$13,584	49

The new work required on the old lines, as per the engineer's report, is a guard lock in the long narrows, and a lock house at lock No. 21, Huntingdon line—estimated as follows, viz :

Lock-house,	$600
Guard lock,	4,500
To which I would add balance of fence, probably,	800
Required to complete,	$5,900 00

The whole length of the Juniata division is one hundred and twenty-eight miles, of which about fifteen miles are slack-water.

The following tables will exhibit the amount paid, to whom, and for what purpose, on the Frankstown line, during the past year, viz :

FENCING.

To whom paid.	*No. of Section.*	*Amount.*	
James Clauson,	1, 2 & 3,	$6	30
John Hinports,	4,	10	50
John Lingafelter,	8,	85	40
Arthur Crawford,	9,	124	60
John Yorty,	10,	64	40
Abraham Crumbacker,	11,	81	90
Christian Gart,	11 & 12,	155	40
George Clapper,	15,	171	50

To whom paid.	*No. of Section.*	*Amount.*
Aaron Burns,	24,	47 60
Joseph Feay,	26,	69 30
David Ake,	29,	46 20
Abraham Sheonfelt,	30,	150 50
George Schmucker,	31,	40 00
William Hammond,	33,	74 20
William Stewart,	54 & 55,	52 50
Carns Patterson	57,	350 70
John Shoenberger,	61,	245
James M'Cahan,	64,	116 20
Henry Miller,	72 & 73,	196
		$2,088 20

LOCK-HOUSE LOTS.

No. of Lock.		*Amount.*
2 and 3,	Frederick Hileman,	$40
5 and 6,	Christian Gast,	40
7.	Henry Leamer, sen.	40
8,	Henry Leamer, sen.	40
9,	Absalom Boyles,	30
10 and 11,	Aaron Burns,	40
13,	David Ake,	50
18,	James Dunn,	30
21 and 22,	Henry S. Spang,	40
23 and 24,	Henry S. Spang,	30
27 and 28,	Robert G. Stewart,	35
32 and 33,	William Stewart,	40
39 and 40,	James M'Cahan,	40
41,	John Whittaker, sen.	30
42 and 43,	Leonard Kimball,	40
		$565

MATERIALS FOR FENCING LOTS.

Thomas Jackson,		$6 30
John Donnelly,		51 30
Thomas Donnelly,		22 45
William M'Clelland,		4 00
M'Kee & Hewitt,		20
James Drake,		1 25
Adam Purcell,		18 37½
John Walker,		69 99½
N. W. Green,		1 12½
Absalom Boyles,		25 00
		219 79½
John K. Neff,	(added,)	1 20
		$220 99

C. E. Taylor, engineer, services from 1st November to 10th March, inclusive, 130 days, at $4,	520 00
J. K. Moorhead, superintendent, one year, 365 days, at 50 cents per day,	182 50
	$702 50

To whom paid.	*Kind of work.*	*Amount.*
Robson & Lowe,	Weigh lock,	3,490 52½
Robson & Lowe,	Culvert at do.,	1,278 77½
John Cole,	Weigh scales,	3,000 00
H. L. Patterson,	House over do.,	830 00
John Lytle,	Weigh-master's house,	840 00
George Mulhollan,	Lock house No. 28,	230 00
Canberry & Divine,	Digging wells,	36 80
M. S. Clark,	Slips at basin,	42 64
H. B. Smith,	Do. do.,	714 64
Hiram Grady,	Pumps at locks,	87 75
Henry F. Tammony,	Locks Nos, 38, 39 & 40,	763 45
J. M. Johnson,	Raising turnpike,	28 45
Samuel Hunter,	Carriage of pump,	1 50
		$11,344 53

CONTINGENT EXPENSES,

W. B. & J. Underwood, advertising,	$1 25
Hugh Hamilton & Son, do.	1 25
Shugert & Cummings, do.	4 50
Alexander Gwin, do.	1
Thomas P. Campbell, do.	2
Henry Horbison, wood,	6
Henry Antes, tape,	37½
J. K. Moorhead, office rent,	40
Do. removing office,	3 50
Isaac Dorland, postage,	35 05
G. S. Peters, blank deeds,	2
Adolphus Patterson, postage,	25 63
Hugh Hamilton & Son, advertising,	2
Isaac Dorland, postage,	47 19
Do. filling up deeds, &c.	5 50
David R. Porter, recording deeds,	21 78½
A. P. Wilson, attorney's fees,	35
	$234 23

A summary of the foregoing Tables.

Fencing, - - - -	$2,088 20
Lock house lots, - - - -	565 00
Materials for fencing lots, - -	220 99½
Sundry payments, - - -	11,344 53
Superintendent and engineer's pay, - -	702 50
Contingent expenses, - - -	234 23
	$15,155 45½

There is a balance of two thousand four hundred and fifty-two dollars and fifteen cents remaining in my hands, applicable to the construction of the Frankstown line. This sum, I believe, will be sufficient to complete the unfinished work, pay for fencing, purchase lots, and pay balances that are due and remain unpaid.

The following table will exhibit the amount due and unpaid, and to whom, and also an estimate of the amount required to finish the line:

Due and unpaid.		*Amount.*
Section 2,	Barnes & Morrison,	$21 00
Do 8,	M'Vey & M'Laughlin,	219 77
Do 55,	Le Grand Bancroft,	378 86
Do 66,	Richardson, Swoope & Coulter,	6 85
Weigh-master's house, John Lytle, retained per centage,		160 00
		$786 48
To finish house, estimate of engineer,		277 78½
Fencing lock house lots, contingencies & superintendence,		1,387 88½
		$2,452 15

The only officer remaining in service, and paid out of the funds appropriated to this line, is the superintendent, at a salary of fifty cents per day.

Sylvester Welch, principal engineer, salary twenty-five hundred dollars per annum.

M. R. Stealey, principal assistant engineer, salary, four dollars per day.

Both remain in service, but are paid out of funds appropriated to the Western division and Portage rail-road.

The following tables exhibit the amount of damages paid on the Juniata division during the present year, and to whom.

Paid on the award of the appraisers.

When paid.	*To whom paid.*	*Line.*	*Amount.*
1833 Nov. 16,	James Milliken,	Lewistown,	1266
1834 Feb. 27,	Zachariah Gemmil's heirs,	Frankstown	200
May 5,	Jane Coffman,	Huntingdon,	100
July 3,	William Mayes,	do.	150
" "	Andrew Mayes,	do.	75

When paid.	*To whom paid.*	*Line.*	*Amount.*
1834 July 3,	Thomas Whittaker,	Frankstown,	50
" 10,	Wm. and John Dysart,	Huntingdon,	50
" 14,	Peter Good,	Frankstown,	1000
" 19,	Eliza G. Thompson,	do.	200
" "	William Jackson's heirs,	do.	200
" "	Peter Harshberger,	Huntingdon,	225
Aug. 14,	John Lingafelter,	Frankstown,	100
" 16,	James Mitchell,	Huntingdon,	80
" "	Wm. and Rebecca Mcvay,	do.	100
Oct. 2,	Hannah Galbraith,	do.	40
" 31,	Jacob Miller,	do.	260
			$ 4095

Paid on the resolutions of the canal commissioners during the present year.

When paid.	*To whom paid.*	*Line.*	*Amount.*
1833 Nov. 4,	Samuel Royer,	Frankstown,	1800
Dec. 2,	Wm. and M. T. Mayes,	Huntingdon,	100
1834 May 4,	George Mitchell,	do.	87 50
" 24,	Adolphus Patterson,	Frankstown,	260
" "	John F. Lowry,	do.	700
July 4,	Elizabeth Bord's Ex'rs,	do.	350
" 10,	William Dysart,	Huntingdon,	100
" "	John Dysart,	do.	75
" "	Wm. and John Dysart,	do.	87 50
" 30,	Aaron Burns,	Frankstown,	120
" 31,	Elias Hoover,	do.	120
" "	Robert Alexander,	do.	50
" "	Jacob Alley,	do.	150
Aug. 2,	Robert Stitt,	Huntingdon,	30
" 14,	Michael Keech,	Frankstown,	100
" 15,	Henry Rodkey,	do.	16
" 18,	Henry S. Spang,	do.	700
Sept. 20,	John Criswell,	do.	200
" 25,	William Wakefield,	Huntingdon,	100
" "	Michael Rhoad's heirs,	Frankstown,	800
" 27,	Daniel Neff,	do.	50
" 28,	John Spielman,	do.	150
" 30,	John Kinports,	do.	100
" "	David Coldwell,	do.	25
" "	Samuel Thompson,	do.	125
Oct. 2,	Nicholas Criswell,	do.	200
" 17,	Christian Gast,	do.	200
			$ 6796

Respectfully submitted,
J. K. MOORHEAD, Superintendent.

No. 8.

Report of S. Welch, Engineer.

ENGINEER'S OFFICE,
November 1st, 1834,

TO JAMES K. MOORHEAD, ESQ.,

Superintendent, Juniata Division, Pennsylvania Canal.

SIR—In obedience to instructions from the secretary of the board of Canal Commissioners, directing a statement of the condition of the Juniata division of the Pennsylvania canal, to be made to the superintendent, I have the honor to submit the following report—

The canal was opened for the passage of boats, from its point of junction with the Susquehanna division, to Frankstown, on or about the 6th of March. From Frankstown to Hollidaysburg, (about two miles,) the water was not let in, in consequence of some unfinished work at the weigh-lock, until about the 12th of March.

On the Frankstown line, in length thirty-eight and a half miles, the navigation has not been interrupted at any one time, during the season, for a whole day. On the Huntingdon line, several breaches have occurred in the embankments, principally in the vicinity of Waynesburg. Some of these have interrupted the passage of boats, for two or three days, and in one instance seven days. There have been but few breaches on the Lewistown line, and these, with one exception, have been of small extent. The whole line is now in good order.

The supply of water has been abundant for all parts of the canal, during the whole season; and where its introduction was not impeded by incidental causes, the different levels have been kept full, or of such depth as was required for a good navigation. On some parts of the Huntingdon and Lewistown lines, where the canal is supplied for twenty or twenty-five miles, from one feeder, a species of water grass which grows in the bottom of the canal, during the months of July and August, obstructed the passage of the water so much as to prevent a supply from reaching the lower levels. This grass was cut and removed two or three times during the season. It may become necessary hereafter, to cut it more frequently.

Directions were given to the supervisor on the Frankstown line, sometime in July, to raise the abutments of the dams from two to three and a half feet, also the guard banks, which connect them with the high ground. It was found that the water during the highest floods which occurred within the last year, rose to within a foot or eighteen inches of the top of the abutments. The water, during these floods, was not as high as it is said to have been, several times, before the canal was made: and it was supposed that during an extraordinary flood, the water would pass over the abutments and injure or destroy the dams. The abutments and guard banks which were the most exposed, have been raised. They will all be finished before the commencement of winter. Several of the dams have been gravelled this season; otherwise they have required but little or no repairs. They are all in good order, and appear to be secure from injury by floods.

In compliance with an order of the board, by resolution, dated August 25th, 1834, a new dam has been commenced across the river on the south side of the Island, at the head of the Raystown feeder. It is constructed of timber laid up in the form of crib work, filled with stone, and covered, on both slopes, with white oak timbers, six inches thick. The space between the old and new dams will be filled with river gravel, to within about two and a half feet of the top of the dams; upon this gravel, flat stones will be placed, edgewise, in ranges across the river, so as to form a pavement two feet deep. The timber work and filling of the dams are nearly finished. The filling between the dams and the paving, will be done in about four weeks. The work is well executed, and, when finished, the dam will be one of the best on the river. The dam across the river on the north side of the Island, is in good order, and requires, for the present, no repairs.

The feeder dam below Lewistown, (head of the Long Narrows,) has been raised nearly three feet. The range of cribs put in last season, below and adjoining the dam, has been raised and connected with it, so as to form a regular slope from the river to the water below. Both the lower and the upper slopes are covered with white oak timbers six inches thick, and strongly secured with iron bolts to the timbers below them. The guard gates constructed in the winter of 1832 & 3, below this dam, do not effectually protect the canal during very high floods.—The water of the river overflows the bank below the gates, and washes it down. A guard lock about two miles below the dam, would render the canal secure, and prevent an interruption to the navigation in high water. The canal bank should be raised about two feet, from the proposed guard lock to a point about three-quarters of a mile towards the dam. The present gates can remain as they are—they will be of use in the event of an extraordinary flood.

The supervisor has been directed to raise the dam across the west channel of the river at North's Island, from a foot to eighteen inches, and to cover both slopes with timbers not less than six inches thick. This work will not be done this season. The dam on the east side of the Island is in good order.

On the Frankstown line, the aqueducts are generally in good order. One of them, (that near Alexandria,) will require some slight repairs during the winter. On the Huntingdon line, the aqueduct at Jack's Narrows will require caulking in the bottom of the trunk and perhaps some slight repairs to the bottom plank. It is otherwise in good order. Two of the spans of the aqueduct at Shaffer's ford must be taken down and rebuilt—partly with new timbers. This work should be done during the winter. The other aqueducts on this line will require but little or no repairs. The arches of the aqueduct over Doe creek, (at Mexico,) on the Lewistown line, have cracked and partially settled: they should be supported and strengthened by inserting ribs of cast iron—this should be done during the winter. Some repairs will be necessary for the aqueduct over the Juniata at Duncan's Island, but they will not involve much expense. The other aqueducts on this line are generally in good order, and will require, for the next season, but little or no repairs.

The locks on the Frankstown line are all in good order, except the guard and lift lock No. 10, near Royer & Co.'s forge—the timber work of this must be renewed during the coming winter. On the Huntingdon line the locks are generally in good order and will require but little repairing. On the Lewistown line, some of the timbers of the lock gates are considerably decayed, and in some instances new gates should be put in during the next winter. Timber should be provided next season for new gates for all the locks on the Lewistown and Huntingdon lines. It should be placed in a dry situation, from which it can be taken when wanted for use. New cast iron paddle gates have been directed to be put into some of the locks on the Lewistown line, and some will be required on the Huntingdon line.

The culverts on this division of the canal, have required but little repair during the season. They are now in good order, and appear to be permanent.

The locks in the dams below Huntingdon, built for the accommodation of arks, rafts, &c. which descend the river, are all in a bad state of repair—the timber work is a good deal decayed and broken. The schute at the Raystown feeder dam, has been removed to make room for the new dam built this season: It was in a delapidated state, and not safe for the passage of arks or rafts. As the board have given no directions to repair the river locks, or replace the schute, no work has been done to them this season, further than was deemed necessary for the security of the dams.

The feeder from the south branch of the Juniata, from which a part of the supply of water for the canal from Hollidaysburg to Frankstown is taken, leaks considerably; and it will require a good deal of labor to render it perfectly tight. The water passes off through the fissures of the limestone rock, which forms, for a considerable distance, the bottom and one side of the canal. This rock must be removed, and its place supplied with gravel, or the canal must be partly filled up. The latter plan would destroy the navigation, but it would probably be the least expensive mode of stopping the leaks.

The only work, except building fence, upon this division, now in progress, under contracts made by the superintendent, is the weighmaster's house at Hollidaysburg. This will be finished in from one to two weeks.

The contract price for the house is,	$1177 78
Amount of work estimated,	1000 00
Amount required to complete the house, including a drain and other incidental work,	277 78

The new work required on this division, to be executed under contracts to be made by the superintendent, consists of a lock-house at lock No 21, of the Lewistown line, and a guard lock about two miles below the Lewistown dam.

Estimated cost of lock-houses,	$600
Estimated cost of guard lock, to be built of dry rubble wall, faced with timber and plank, with lumber bottom, (to be built in winter,)	4,500
Amount required for new work, not under contract, exclusive of fence,	$5,100

All which is respectfully submitted.

SYLVESTER WELCH, *Engineer*.

Western Division.

No. 9.

Report of Samuel Jones, Superintendent.

CANAL.

To James Clarke, Esq.
President of the Board of Canal Commissioners.

Sir—All the work under contract on the Western division, at the period of the last annual report, has been completed, with the exception of the water ways around locks Nos. 3, 7, 8, 9, 10, 11, 14 and 15. These having been suspended for want of funds, cannot be resumed until the drawing off of the water the ensuing winter. Materials, however, for their construction, have been delivered, and the work will be finished as soon as circumstances will permit.

The principal contracts unfinished on the first of November last, were those for the Stony Creek feeder. These have all been completed, and generally paid for, and the feeder has been in practical use since the opening of the canal in March last.

The following embraces all the disbursements which have been made on this work:

Section No. 1,	Hugh Curren, contractor,	$4,223	42
" No. 2,	Blakely and Lamb,	2,710	90
Dam, guard-lock & sec. No. 3,	W. & J. Graham,	10,846	33
Hydraulic lime,	J. P. White,	1,727	16¾
Culvert on sec. No. 1,	Hugh Curren,	374	79
Draw bridge for rail-way,	M'Dermott, Creighton & Co.	500	
Skew bridge at Bedford road,	Rose and Boucher,	150	65
Road bridge at Main street,	do do	123	40
Farm bridges on sec 2 & 3,	George Hill,	233	78

Fence on section No. 1,	P. Levergood,	$64
Do do 2,	J. Horner, Jr.	50 91
Do do "	J. Horner,	250 40
Do do 3,	Jonas Horner,	149 18
Removing kitchen, &c.	Jacob Horner, Jr.	90
Miscellaneous—Paddle gates, &c. &c.		91 64
Total amount paid upon Stony Creek feeder,		$21,566 56¾
Whole am't of estimated cost, including miscellaneous,		21,641 86¾
Leaving sum yet due contractors for draw bridge,		$75 30

The other items of work under contract, and unfinished on the first of November last, were the water ways heretofore mentioned, a foot bridge at Rogers' mill, and four contracts for fence. Upon these several contracts there has been paid as follows:

On water ways, at locks No. 3, 7, 8, &c. of the Kiskiminetas line,	S. S. Jamison, con.	$820
Water way at lock No. 16,	Jos. Barnes,	555 51¾
Foot bridge at Rogers' mill,	Henry Rogers,	80
Fence on sec. 116, K. line,	Jos. Barnes,	98 80
Making the sum paid,		$1554 31¾

The estimated cost of these items of work when finished is as follows:

Water ways,	$3841 51¾	
Fence,	245 60	
Foot bridge,	80	
		4167 11

Deduct from this sum of $4167 11, the amount paid as above, and the sum required to complete the contracts will be 3612 70

In addition to the foregoing disbursements, there has been paid upon estimates for old work, made previous to last report, viz:

To Sterrett & Trucks,	for arching Con. tunnel,	$1581 31
S. H. Moon,	for protections for piers of aqud't.	1473 09
Merrill & Addison,	for dam No. 4, Ligonier line,	498 08
Making in all,		$3552 48

The new work which was authorized by sundry resolutions of the board, and put under contract during the present year, consists of two sewers at Pittsburg; a weigh-lock and scale; a dwelling-house for the weigh master; an office for the collector of tolls, and a towing-path bridge—all at Johnstown. The board have also authorized the erection of a building over the weigh-lock at Allegheny, to serve as an office for the collector; and they have also directed that the building now occupied by the collector of tolls at this place, should be so altered, as to render it suitable for the residence of the weigh-master.

The cost of these several items of work have been estimated as follows:

Sewer on north side of Grant's hill, Pittsburg,	$6609	
do. on south side of do. do.	4377	17
Weigh-lock at Johnstown,	5708	83
Shed over weigh-lock,	779	
Scale for weigh-lock, including all work,	1531	
Dwelling house for weigh-master,	1400	
Office, &c. for collector of tolls, Johnstown,	1800	
Bridge at Johnstown,	1600	
Office for collector, and altering old building, at Allegheny,	700	
Add for contingencies,	3000	
	$27,505	00

Upon these contracts payments have been made, viz:

On sewer, south side,	A. H. Smith,	$3250	
do. north side,	F. D. Cochren,	3740	
Weigh-lock,	Snodgrass & Co.	2125	
House for weigh-master,	J. Ray,	730	
Office for collector,	Snodgrass & Tittle,	425	
			10,270 00
Leaving a sum yet to be provided, amounting to			$17,235 00

Now, the whole aggregate value of work done and to be done on the Western division under the contracts before mentioned, is as follows:

Old work,	$3,552	48
Stony creek feeder, &c.	21,641	86
Water ways, fence, &c.	4,167	11
New work,	27,505	
	56,866	45
To this add purchase money p'd for lots for lockhouses, &c.	580	
	$57,446	45

To meet this sum, there remained in my hands on the 1st November last,	$8,967 81	
Since that period I have drawn from the Treasury, on account,	31,000	
		39,967 81
Leaving a sum yet to pay, and to be provided, to complete the work now under contract, of		$17,478 64

The principal contracts now under way, are the sewers at Pittsburg, and the weigh-lock at Johnstown. The sewers, it will be recollected, are for the purpose of carrying the wash from Grant's Hill into the

Allegheny and Monongahela rivers, and thereby prevent it from filling up that part of the canal passing through the city of Pittsburg, which, in consequence of this circumstance, has been rendered partly useless ever since its completion. The sewer on the north side of the hill is two thousand seven hundred feet long, and extends from Seventh-street, along the base of the hill, to Ohara-street, in the Northern Liberties, and thence down the same to the Allegheny river. That on the south side, is one thousand seven hundred feet in length, extending from Lake's run, at Ross-street bridge, to the Monongahela, and emptying into the river immediately above the out-let lock. The latter sewer is nearly, or altogether finished. The former one will be done by the middle of the month. The sewers are constructed of brick. Their form is cylindrical, and their diameters five feet.

The weigh-lock at Johnstown will be completed during the present month. It will be of superior workmanship, and upon a plan similar to that at Hollidaysburg. The collector's office, and the house for the weigh-master, are both in a very forward state, and will be ready by the first of December.

The Western division was opened for navigation early in March last, and has continued to be navigable up to this time, without any interruptions of consequence. A few breaches occurred, but they were not of such magnitude as to create any serious delay.

Owing to the extraordinary dryness of the past season, the water in the canal has been extremely low—so much so as to indicate that in future seasons of a similar character, and when the trade shall have increased, there will not be an adequate supply, without a resort to reservoirs. In accordance with the views of the board on this subject, a party, under the direction of Mr. Welch, principal engineer, is now engaged in making the necessary surveys, with regard to the location of the necessary sites for such reservoirs.

For further information respecting the state of the work on the canal, I refer the board to the accompanying report, made to me by the principal engineer.

Of the awards made by the board for damages upon the Western division, the following have been accepted and paid since the last report:—

To George Hawke,	$ 100
Joseph Hill's administrators,	80
J. K. Phillibor,	15
William B. Foster,	150
Andrew Boggs,	15,000
Robert Walker,	150
James Gailey,	350
John B. Butler,	100
Samuel Wallace,	200
Jacob Horner, jr.	35
James M'Mullen,	300
Peter Neas,	550
Daniel Freese,	175
	$ 17,205

The following awards have been formally rejected:

To C. Magee,	$600 00
" A. Watson,	250 00
" S. Kingsland,	100 00
" Wm. Rhea,	100 00
" B. McManus,	30 00
" Jonas Horner,	100 00
" Jacob Horner,	50 00
" Adam Treftz,	25 00
" Thomas Johnson of John,	100 00
	$1,355 00

Awards have also been made to the following persons who have not signified their acceptance, although duly notified:

To Samuel Coulter,	100 00
" Wm. Lamer,	50 00
" A. Hosack,	10 00
" Thomas Reed,	50 00
" Samuel Britain,	50 00
" Joseph Dixon's heirs,	80 00
" H. M. Brackenridge,	150 00
	$490 00

On the 1st of Nov. last, there remained in my hands for the payment of damages,	1,635 00
Since which time I have drawn from the Treasury, for similar purposes,	15,000 00
Making the whole amount available,	$16,635 00
The amount, however, that has been paid as before mentioned, is	17,205 00
Leaving a sum to my credit, (being the amount disbursed beyond receipts,) of	$570 00
The amount of damages rejected and unpaid is,	1,840 00
To this add sum due superintendent,	570 00
And the total amount required to pay all damages, should they hereafter be accepted, will be	$2,410 00

Respectfully submitted,
S. JONES, Superintendent.

Canal Office, Nov. 1st, 1834.

No. 10.

Report of S. Welch, Engineer.

Engineer's Office,
Johnstown, Nov. 1st, 1834.

To Samuel Jones, Esq.

Superintendent of the Western Division of the Pennsylvania Canal and Allegheny Portage Rail-road:

Sir—All the new work upon the Western division which was under contract and in progress on the first of November last, is finished. with the exception of the water ways around the locks on the Kiskiminetas and Kiskiminetas and Conemaugh lines. These were suspended last winter for want of funds. The canal was filled with water this spring before any funds were appropriated for this purpose; and as most of the work to be done, required the water to be out of the canal, but little has been done to them this season, except the delivery of a few materials. They are to be finished during the winter.

Estimated cost of the work above referred to.

Stony Creek feeder—Contracts all completed.

Section No. 1,	Hugh Curren, contractor,	$4,223	42
" No. 2,	Blakely & Lamb,	2,710	90
" No. 3, dam, guard lock, &c.	W. & J. C. Graham,	10,846	33
Furnishing hydraulic lime,	J. P. White,	1,571	79
Draw bridge for Rail-road st.,	McDermott, Creighton & Co.	575	30
Road bridge at Main street,	Rose & Boucher,	123	40
Skew bridge at Bedford road,	Rose & Boucher,	130	65
Farm bridge on sec. No. 2,	George Hill,	116	72
Farm bridge on sec. No. 3,	George Hill,	117	06¼
Fence on section No. 1,	P. Levergood,	64	00
do. on section No. 1 & 2,	J. Horner, Jr.	50	91
do. on section No. 2,	J. Horner,	250	40
do. on section No. 3,	Jonas Horner,	149	18
Removing kitchen, well, oven, &c. on sec. No. 1,	Jacob Horner, Jr.	90	00
Culverts on sec. No. 1,	Hugh Curren,	374	79
		$21,394	85

Cost of foot bridge at Rogers' mill,	Henry Rogers, contractor,		$80 00
Cost fence reported final since last report:			
Kisk. & Con. line,	Joseph Barnes,	$98 80	
Ligonier line,	Jonathan Edwards,	35 60	
" "	John Ellis,	31 20	
			165 60

Estimated cost of water ways on Kisk. and Kisk. & Con. lines:

Lock No. 16, completed, Jos. Barnes, contractor,	$555 51¾	
Locks Nos. 3, 7, 8, 9, 10, 11, 14 & 15, S. S. Jamison, contractor,	3,286 00	
		3,841 51¾
Amount of work done,		1,505 51¾
Amount required to complete the work,		$2,336 00

Of the work put under contract during the present season, the sewers in the city of Pittsburg, directed by resolution of the board dated April 24th, are nearly finished. That which is intended to convey the water of Suke's run into the Monongahela river is about seventeen hundred feet long: that on the Allegheny side of Grant's Hill is about twenty-seven hundred feet long. They are each five feet in diameter. The weigh lock and scales, the dwelling house for the weigh master, the dwelling house of the collector, and the towing path bridge at Johnstown, will all be finished before the setting in of winter. The weigh lock and weigh masters' houses, are now nearly finished.

Estimated cost of the sewers at Pittsburg, including excavation and all work to be executed under the contracts:

Sewer on the Northern side of Grant's Hill—		
Brick work, 636,800, at $6 75 per M.,	$4,298 40	
Three inlets and one outlet,	600	
Rubble wall, 100 perches, at $4,	400	
Paving in Penn street, 100 yards, at 15 cts.,	15	
Excavation, 8,620 c. yards, at 13 cts.,	1,120 60	
Passing through grave yard,	100 00	
Old sewer taken up, 200 yards, at 37½ cts.,	75 00	
		$6,609 00
Sewer on the southern side of Grant's Hill—		
Brick work, 460,110, at $7 per M.,	$3,220 77	
One inlet and one outlet,	400 00	
Excavation, 3,230 c. yards, at 18 cts.,	581 40	
Embankment, 1,750 " at 10,	175 00	
		4,377 17
		$10,986 17

Estimated cost of building a room over the weigh lock at Pittsburg for an office for the collector, and of repairing and fitting the lock house for the weigh master's dwelling, as directed by a resolution of the board, dated August 25th, 1834,	700 00

Estimated cost of the weigh lock at Johnstown, including all work to be done under the contracts for building the weigh lock:

Masonry in walls,	640 per.,	at $5 25,	$3,360 00	
Rubble do. in wing,	20 per.,	at 3 75,	75 00	
Excavation,	2,859 c. yds.,	at 25 cts.,	714 75	
Do.,	2,500 "	12	300	
Embankm't,	500 "	17	85	
Puddle,	150 "	30	45	
Timber,	2,644 feet,	7	185 08	
Plank, B. M.,	24,000 ft.,	at $18 50 per M.,	444 00	
Conduits, &c.,			500 00	
				$5,708 83

Estimated cost of shed and weigh office for the weigh lock,	779
Estimated cost of scale for weigh lock, including all iron work,	1,531
Estimated cost of the dwelling house for the weigh master,	1,400
Estimated cost of the dwelling house and office for the collector at Johnstown,	1,800
Estimated cost of the bridge over the canal and weigh lock at Johnstown,	1,600 00
	$24,505 00
Amount of work done on the 4th instant, was	11,148 00
Amount required to complete contracts for new work,	$13,357 00
Amount required to finish old work,	2,336 00
Add for contingencies—making fence, &c.,	1,500 00
Amount required to complete the works on the Western division, to be done under contracts entered into by the superintendent,	$17,193 00

This division of the canal was opened for navigation about the 10th day of March. The greater part of it was ready for boats to pass through, at an earlier period; but as the breach in the dam (No. 2 of Kiskiminetas line) could not be repaired before that time, the portions of the canal which were filled with water, were but little used.

The dams upon the Kiskiminetas, and Kiskiminetas & Conemaugh lines, were all more or less injured by the ice-floods during the winter, except dam No. 4. About one-third of dam No. 2 was carried away. The aprons of dams No. 3 and 5, were cut away by the ice, and the dams were undermined and sunk down to such an extent as to render a permanent repair impracticable. The new crib-work below dam No. 1, (Leechburg dam,) was partly torn away. The dam sustained no further injury than the loss of a few of the covering timbers of the lower slope.

On the 19th of March, the board directed by resolution, that new dams be built "below and adjoining dams No. 2, 3 and 5 of the Kiskiminetas, and Kiskiminetas and Conemaugh lines." In conformity with this order of the board, the supervisors have constructed new dams of the most permanent character at each of these points—they are all completed, or very nearly so. The crib work below Dam No 1, has been replaced, raised and connected with the main dam. The lower slope of this dam is now very flat—it measures in length fifty-seven feet. This work will be finished in a few days.

All the dams on the Western division may now be considered safe; they are probably less liable to injury than the other works connected with the canal.

The materials for completing the repairs of the large aqueducts over the Allegheny river, are all prepared and ready to be put up as soon as the water is taken out of the canal. The remainder of the new arches can be put in during the months of January and February.—The aqueducts may be ready for the introduction of the water by the first of March.

The timbers in the small aqueducts which were first built, particularly in those of the Allegheny line, are a good deal decayed—they will not last more than one, or at most two years longer. Some of the timbers of the aqueduct over Buffaloe creek must be replaced during the next season or sooner.

The bridges along the canal in which wooden frames were used as a substitute for stone abutments, will soon require new abutments; the timber being placed in contact with the earth, decays rapidly, and the first bridges that were built will soon give way. Permanent stone abutments should be put in where a bridge is repaired.

New gates will be required in a part of the locks on the Allegheny and Kiskiminetas lines, next season. The timbers of those which were built in 1827 & '8, are decayed, and frequently break. The lock gates on the Kiskiminetas and Conemaugh lines, will generally last one or two years longer—the out-let lock in Alleghenytown is repaired, and boats can pass from the canal into the river.

The canal through the city of Pittsburg, has not been navigable this season—it is partly filled with gravel, &c., washed from Grant's hill and the adjacent grounds. During the time this part of the canal was kept open for the passage of boats, a heavy expense was incurred in keeping it clear; a heavy rain would fill up parts of the canal so that boats could not pass until the water was withdrawn, and the mud and gravel removed—this had to be repeated after every violent rain. As soon as the sewers are finished, this difficulty will cease to exist, as the water, mud, &c., will pass off through them into the rivers.

But few breaches have occurred in the canal this season—not more than five or six: each of these stopped the passage of the boats at the places where they occurred, from eight or ten to forty-eight hours.

The latter part of the season has been remarkably dry. On the upper forty miles of the canal, the water of the Conemaugh has not been sufficient to supply it in case of an extensive trade. On the lower part of the canal, there has been an adequate supply.

The surveys of sites for reservoirs, directed to be made by the board, are not yet completed. Matthew R. Stealy, Esq., the principal assistant engineer of the Western and Juniata divisions, is now engaged in making them. They will be finished by about the middle of November, when the information obtained by the surveys will be reported to the board.

All which is respectfully submitted,

SYLVESTER WELCH, Engineer.

Beaver Division.

No. 11.

Report of J. Dickey, late Superintendent.

BEAVER, October 31st 1834.

To the Board of Canal Commissioners.

Gentlemen—In compliance with a request from the secretary of the board of Commissioners, contained in his letter of the 9th instant, I have made out and now transmit to you a statement of the amount of expenditures and the amount paid, upon the Beaver division of the Pennsylvania canal, from the 31st day of October, 1833, the date of my last report, up to the 28th day of November, 1833, at which time I resigned, the superintendency. The following presents a summary of the expenditures, viz:

On Sections,	$ 3,627	66¾
Locks,	12,544	76
Dams,	7,069	
Aqueduct,	142	62
Towing path bridge Conoquenessing,	726	
Farm bridges,	846	69
Towing path bridges,	281	27
Waste wier,	143	03
Lock house,	132	
	$ 25,513	03¾
Superintendent, Engineers, &c. &c.,	539	16
Miscellaneous expenses,	31	93
	$ 26,084	12¾
To which add the amount of expenditures per report of the 31st October, 1833,	384,213	57¼
Total amount,	$ 410,297	70

The accompanying statements present the above in detail.

Yours respectfully &c.

JOHN DICKEY.

No. 12.

Report of Samuel Power, Superintendent.

Canal Office, Beaver,
October 31st, 1834.

To the Board of Canal Commissioners:

Gentlemen:—In obedience to your instructions of the 9th day of October, received through your secretary, and in conformity to the acts of Assembly, I beg leave to submit the following report of the transactions on the Beaver division, for the present year:

On the 26th day of May, 1834, I let, re-let, and put under contract, the feeder dam across the Shenango, guard lock at New Castle, canal section at the mouth of Beaver below locks No. 16 and 17, towing path bridges No. 1 and 2 on the Shenango, towing path sections No. 1, 8 and 10 on the Shenango locks, wiers No. 1 at lock No. 2, No. 4 at lock No. 5, and No. 3 at lock No. 4—also lock houses No. 1 and 2 at locks No. 1 and 2, which were necessary in order to complete this division. I also entered into contract with the president of the Brighton bridge company, for the construction of the bridge over the canal at the end of the Brighton bridge, for the sum of one thousand dollars, agreeably to the resolution of the board of canal commissioners of the 19th March, 1834.

The original plan of raising the bridge over the Shenango, was abandoned; and the contract entered into with David Kelly has been cancelled, for the reasons assigned by the principal engineer in his report of this date. A new contract has been entered into with Mr. Kelly, the former contractor, to construct two abutments for a new bridge; and the commissioners of Mercer county have entered into contract to build the superstructure. I have no doubt the plan now adopted is not only the best and the cheapest, but conforms to the resolution of the board of commissioners of the 3d of April, 1834.

The accompanying report of Dr. Whippo, principal engineer, furnishes to the board a detailed statement of the progress that has been made in carrying on the work of the division during the present year. It will be seen, by referring to that report, that the whole of the work on the Beaver division has been completed, with the exception of a few jobs that are unfinished and now in progress, and will be completed in all the month December.

Schedule No. 1 and 2, exhibits the contracts entered into the present year for the construction of work, the names of the contractors, together with the prices at which the different kinds of work have been let.

Tabular statement No. 1, 2, 3, 4, exhibits the amount estimated, retained and paid on sections, dams, aqueducts, locks, bridges, &c. &c. during the present year, from the 28th day of November, 1833, up to the 31st day of October, 1834, together with the amount of per centage due to contractors previous to the 28th November, 1833, and paid up during the present year.

Statement No. 1 exhibits the amount appropriated to this division, and the amount of expenditures upon the work from the commencement up to the present time.

Statement No. 2, shows the whole of the costs of the Beaver division, and the balance of appropriations unexpended.

Table No. 1 exhibits the amount of money paid and due to superintendent, engineers, and others, during the present year.

Table No. 2 exhibits the amount of miscellaneous expenditures during the present year.

Table No. 3 exhibits the amount of damages paid, agreeably to the resolution of the board of canal commissioners of the 27th August, 1834.

Table No. 4 exhibits the amount of temporary damages, the amount paid for making fence, and the amount paid to job contractors.

Statement No. 3 exhibits the number and location of locks, dams and aqueducts, together with their respective heights, lifts, &c.

The whole length of the Beaver division, including the towing path on the pool of the Shenango feeder dam, is thirty and three-fourths of a mile, 8.05 miles of which are canal, and the remainder, 22.07 miles, is slackwater.

It was deemed important to open the canal, for the purposes of navigation, at the earliest day practicable: In order to effect this object, it became necessary to repair some of the canal and towing path sections, to remove slips, and add additional gravel to some of the dams. I therefore entered into contract with William Huff and William Johnston as job contractors, and allotted to Huff that part of the division from lock No. 1 at New Castle, to dam No. 3 at Conoquenessing, and to Johnston the remainder of the division from dam No. 3, to locks No. 16 and 17 at the mouth of Beaver, or to dam No. 6. Under these contracts there has been expended in making repairs to the sections and locks—in removing obstructions, in adding gravel to the dams, and in keeping open the navigation, the sum of

The canal was declared navigable by the principal engineer by a public notice to that effect, on the 28th day of May last, from New Castle to dam No. 6 at Bridgewater, since which time it has been navigated, with the exception of two or three weeks in the summer, when the water got so low in the pools of the dams (for want of gravel) as to suspend the navigation.

The enterprise of our fellow citizens has already been displayed on the Beaver division. Two lines of packet boats have been established to carry freight and passengers from the Ohio river, at the mouth of Beaver to the town of New Castle; those canal boats are connected with a line of steamboats that ply daily between Beaver and Pittsburg. The products brought down in the canal boats are transported to Pittsburg in boats which are towed by the steam boats. These canal boats have done considerable business, and a considerable sum has been paid for tolls since the opening of the navigation on this division. A very large and profitable trade is now carried on between the "Western Reserve" of the State of Ohio and the city of Pittsburg. The completion of the Beaver division has shortened the land transportation twenty-five miles, and the town of Newcastle has already become the place of deposite for the productions of that section of country; thence they are transported to Pittsburg, at the expense of twenty cents per one hundred pounds, and from Newcastle, the head of navigation on the Beaver, to the city of Philadelphia, by the Pennsylvania canal and rail-road, at an expense of eighty-seven and a half cents per hundred pounds.

I have no doubt that a considerable business will be done upon the canal during the ensuing season, but the great advantages of this communication cannot be realized until it be extended to the town of Erie, upon Lake Erie, and a lateral canal completed, connecting the Beaver division with the Ohio canal. It will then be found to be one of the most important and profitable divisions of the Pennsylvania canal.

All which is respectfully submitted

SAMUEL POWER, *Superintendent.*

No. 13.

Report of C. T. Whippo, Engineer.

Samuel Power, Esq.

Superintendent of the Beaver Division, Pennsylvania canal.

Sir:—In conformity to instructions received from the Canal Commissioners, through their secretary, dated Harrisburg, October 9th, 1834, I herewith transmit to you the information required from my department.

The annexed schedule will show the cost of the work still to be completed; and this added to the estimates now in your office, will give the whole cost of the work upon this division.

For the length of the line, you will please to refer to my report of last season. The jobs still unfinished are the following, viz:—The bridge across the Shenango at New Castle; five lock wiers; one farm bridge; four lock houses; the sixteenth and seventeenth locks, together with some minor items, such as running boards to the locks, water gauges, &c.

Upon the sixteenth and seventeenth locks the stone work is completed, except some coping, which is to be laid on the protection wall next the river; little else remains to be done, except finishing the balance beams, and painting the gates. One boat has passed through these locks from the river to the pool above; and in the course of a short time, they will both be in good navigable order. These locks will cost us more than I anticipated last season, owing to the heavy expense which was incurred in removing the gravel and stone which had been carried into the seventeenth lock by the freshet of September, 1833.

The channel at the mouth of the creek has not cost us as much as was anticipated: in fact, we have not done as much work upon it as we intended to do. Our contractors, after removing the upper stratum of gravel to the depth of about three feet, came upon a vein of quicksand, which precluded the possibility of going any lower, without incurring an expense far beyond our means to meet. At this time the river was uncommonly low; so low, indeed, that steamboats, even the Beaver, which draws less water perhaps than any boat on the river, had ceased running. This enabled us to discover the true state of the channels between the mouth of Beaver and Pittsburg, and we found that to excavate down as low as the quicksand, would give us as much water as there was in the deepest of these channels; so that at all times, when boats of any description can run to Pittsburg, they can come up to our outlet lock. When the navigation of the river is improved, this channel will have to be deepened; but until then no more expense need be incurred at this point.

You are aware I presume that dams No. 3 and 4 require some additional gravelling; not with a view of rendering them more safe from the action of floods, for I consider them very secure in this respect, but to make them tighter. Last summer you will recollect that in the driest season the water got so low in the pools, that the navigation was suspended for several weeks. The gravel which was put upon these dams was mostly very coarse, and now there is required a quantity of fine gravel to mix in and fill up the spaces between the coarse, and make the combined mass impervious to water.

The work enumerated in the annexed schedule, except locks Nos. 16 and 17, was purposely suffered to progress slowly, under an impression that we might run short of funds, which we had some reason to fear, as there had been, during the season, several considerable sums taken from our construction fund, for various purposes, not anticipated in my estimate for the cost of the work. These sums were: one of $1000, for constructing a bridge across the canal at Brighton, to connect with the river bridge at that place; one of $2000, paid to Bills & Foreman, contractors for dam No. 5 and lock No. 11, under an act of the Legislature of last winter; besides all the money paid out for repairs upon the line for the last year. It was thought better to leave these unimportant jobs till the last, and secure the completion of those upon which the navigation depended. I believe however now, that it is ascertained we shall have money enough; and I have no doubt every thing on the line will be completed in the course of a few weeks.

The improvement above New Castle has been finished some time ago; and the lock and dam constructed by Messrs. Porter, Lusk & Maynard, at this place, are completed in the most substantial manner. The lock has a double set of gates, for the purpose of guarding against the floods, both of the Shenango and the Neshanock; and it is not only substantial, but I consider it one of the most finished pieces of work which we have on the line.

The plan of raising the Shenango bridge, which we had formerly intended to do, was finally abandoned. On examining the timbers of which it is constructed, I found that they had become so much decayed, that they would not bear to be removed, without breaking and destroying them, and consequently put us to the expense of furnishing new timber, and building a new bridge. The cheapest, and incomparably the best plan, therefore, was to construct abutments for a new bridge; the county commissioners agreeing to build the superstructure. These abutments, under an arrangement made by you with the contractor for raising the old bridge, have been in progress since sometime in August, and are now nearly completed. They are laid up in rustic masonry, of a very substantial kind, with circular wings, turned to a radius of twenty-five feet. The superstructure has been put under contract, and is to be made with a double track, upon what is called the Burr plan; and when completed, as it is to be, in a neat and workman-like manner, will make a fine appearance, and add much to the beauty of the work connected with and adjoining it.

It may be proper to mention to you, that the water in the cross-cut section and the two adjoining pools, is considerably higher than the low portions of the town of New Castle, so that many of the cellars in the place are filled with water, and the people very much incommoded. You will recollect that a culvert was put under the cross-cut section, near the lock, for the purpose of draining off the water which might filtrate through the banks; but the quantity has been much greater than was anticipated, and although ditches have been dug to considerable extent, yet the difficulty has not been obviated. In order to effect this, ditches will require to be dug both ways from the culvert, along the outside of the canal and pool banks, and as low as the bottom of the culvert; so as to receive the water and convey it away. This will be attended with considerable expense, which did not appear to me properly to belong under the head of construction, and it has therefore been left until directions should be given in relation to it by the board of Canal Commissioners.

Respectfully yours,
CHARLES T. WHIPPO.

Brighton, October 31, 1834.

Estimate of work to be completed on the Beaver division, Pennsylvania canal.

Shenango bridge,	$ 617 00
Running boards and water gauges in 13 locks,	702
Lock wier No. 1, at lock No. 2,	100
" " " 6,	75
" 5, " 12,	7
" 6 & 7, " 13 & 14,	595

Farm bridge No. 2, on sections No. 2 & 3,	$35 00
Lock house at lock No. 8,	168
" " 10,	160
" " 14,	31
" " 16 & 17,	209
Bridge across the canal, to connect with the Brighton bridge, now in progress,	200
Locks No. 16 & 17,	2,690 00
	$5,589 00

Brighton, November 1st, 1834.

French Creek Division.

No. 14.

Report of J. Anderson, Superintendent.

Canal Office, near Meadville,
31st October, 1834.

James Clarke, Esq.,
President of the Board of Canal Commisoners si:

Sir:—In compliance with instructions from the board, I proceed to furnish the information required, and in the first place would respectfully refer to the report of Alonzo Livermore, Esq., engineer on this division, which is accompanied with seven tabular statements and an abstract statement, No. 8, giving answers to nearly all the questions put; and in the following statements I trust you will find satisfactory answers to the remaining questions that properly belong to me. It gives me much pleasure to have it in my power to show that this division is so near being finished, and that there will be sufficient funds to meet the final estimates of that which is unfinished, if the engineer's estimates be correct. There have not been any estimates made of the unfinished work since August, with the view of hastening the contractors; therefore, a great portion of the work is already done which the report represents unfinished.

French Creek Division,

Dr.—To sundry appropriations,	$348,160 29	
" appropriation 1834,	94,400 00	
		$442,560 29

Cr.—By estimated work,	$393,697 08	
" unfinished "	15,163 04	
" engineering and incidentals,	32,595 33	
		$441,445 45
If the unfinshed jobs be correctly estimated, balance on hand,		$ 1,104 84

The above item of $32,595 33, consists of the following particulars:

Engineers and superintendent already settled,	$21,978 17	
Engineers and superintendent unsettled, say	2,000 00	
		$23,978 17
Castings, - - - - - -		3,084 33
Water lime and Roman cement, - - - -		4,065 14
Leveling instruments, stationary, office rent, fuel, &c.		1,467 69
Engineering and incidentals as above,		$32,595 33

A list of Superintendent, Engineer, Assistant Engineers and others.

Names.	Stations.	Daily wages.	Amount paid.	Remarks.
Alonzo Livermore,	Engineer,	salary	2,000 00	In service.
John Anderson,	Supt.	3 00	1,095 00	" "
John Wood,	Sub-Assist.	2 00	428 00	" "
Geo. R. Eichbaum,	" "	2 00	722 00	" "
			$4,245 00	
B. B. Vincent,	Prin. Assist.	3 00	132 00	Out of serv.
H. R. Vincent,	Target man,	1 50	55 50	" "
H. R. Vincent,	Axe man,	1 00	173 00	" "
Daniel Brown,	Target man,	1 50	587 50	" "
Kinnard Hamilton,	" "	1 50	229 50	" "
Jairus Livermore,	Axe man,	1 00	209 00	" "
			$1,386 50	$5,631 50

New work on old Feeder line.

Dr.—To cash received at different times,		$4,431 36
Cr.—By cash paid sundries last year,	$2,233 30	
" " for waste wiers this year,	905 14	
" " for exchange bridge,	233 16	
" " for embankment at bridge,	202 00	
" " for engineering,	299 20	$3,872 80
Balance on hand, - - -		$558 58

In my report last year, the sum of $600 00 was estimated for a waste wier on the west end of the feeder as new work on old lines, which was not built nor contracted for, but circumstances may yet render it necessary; and there are yet several small jobs on the Franklin line that ought to be done, and would come under this head, such as foot ways on the balance beams of the locks, fencing, embankment yet to do, which in my opinion will require $200,000, besides the balance now on hand.

N. B. The embankment here mentioned is on the Feeder line.

Damages awarded by the board of appraisers to John Collom, are the only damages paid this year, $450 00.

A list of offers awarded by the canal commissioners on the 27th August, with the claimants' answers accompanies this report.

The navigation is now open from the pool of the feeder dam to the Allegheny river, a line of canal and slack water of thirty-three miles, and in about ten days the west end of the feeder will be completed, which will then be navigable from Conneaut lake to the French creek aqueduct, where it connects with the North end and the Franklin line; its length is thirteen miles, making in all, forty-six miles of canal and slackwater. All which is respectfully submitted by

Your obedient servant,
JOHN ANDERSON, Superintendent.

No. 15.

Report of Alonzo Livermore, Engineer

French Creek Aqueduct,
October 31st, 1834.

To John Anderson, Esq.,

Superintendent of the French creek division, of the Pennsylvania canal.

Sir—I herewith hand to you my annual report, embracing the information required from the secretary of the board of Canal Commissioners, relative to the present state of the work upon the French creek division, as pertaining to my department.

The *new work* not heretofore reported finished, comprehends the Franklin line, twenty-two and a fourth miles, and the north and west ends of the feeder, four and a fourth miles, altogether twenty-six and a half miles, in extent; eighteen and a half miles of this is slackwater, and eight miles of canal navigation. The towing path along the pool of the feeder dam which was not fully staked out until this year, gives a small difference in the distance as heretofore reported.

The new work added to the old feeder line, nineteen and a half miles, makes the whole length of the French creek division, to be forty-six miles, eighteen and a half of which is slackwater and twenty-seven and a half of canal navigation.

The mechanical work upon the *new line* of this division, consists of twenty-one locks, twelve dams, one culvert, three towing path bridges seven road and farm bridges, seventeen lock houses and six waste wiers.

The *locks* twenty are of cut stone masonry, and one of wood, four of these are guards, eight are lift locks with guard walls, and nine lift without guard walls. The whole rise and fall overcome is one hundred and twenty-eight and a half feet.

The *dams* upon this line are built with cribs of timber filled with stone, and cut stone abutments, laid in the New York hydraulic lime. The average length of the dams, in clear of the abutments, is two hundred and sixty-seven feet. The lowest is six feet, the highest sixteen feet, and the average highth ten and a fourth feet.

Most of the dams having been completed last fall, have been in some measure tested as to their permanence by the floods of last winter and spring. We find that those which have not less than three feet base, to one of perpendicular rise for the breast slope, gives to the desending water such an oblique impact upon the gravel below the dam, that the excavation caused by the water, is thrown so far below the lowermost breast timbers, that no injury appears likely to result to the foundation of the dam itself. Two of our dams which had not this slope, the water had excavated so near the foundation as to endanger the work. I therefore directed an additional breast, which has been made this season, and I feel confident that our dams are rendered permanent, if due care is taken for their preservation.

The *feeder dam* it will be recollected was left last fall in a very precarious situation, as regards the work done, on account of the exhaustion of the funds. We found this spring that most of the work done was washed away. This and the additional breasts on the two dams, above mentioned, have swelled the expense upon those items, in some measure, but our contingent allowance of last year, will fully meet this addition, besides all other expenses of a contingent nature.

There are *no aqueducts* upon this line, and but *one culvert*. This is situated upon section No. 36 of the Feeder line, and is built of cut stone masonry, the opening or passage for the water is two feet square.

There are *three towing path bridges*, all upon the Franklin line, the abutments and piers are cut stone masonry, and the superstructure of wood. There is one *road bridge* across the canal opposite Franklin, the abutments of cut stone and wood superstructure; all the other *road and farm bridges* six in number are built of wood.

There are *six waste wiers* including those around the locks, four of them built as slope wall and pavement, the others of wood.

The tabular statement, herewith submitted, contains all the important details, not otherwise mentioned.

The *Franklin line, and the north end of the feeder*, is now ready for public use. The west end of the feeder will be ready by the middle of November next. A scarcity of hands has prevailed upon this line the whole season, owing to the prevalence of the fever and ague in that neighborhood. Hands have also been scarce upon our whole line since the harvesting season commenced. This cause and the late time we received orders to prosecute our work (about the 1st of May) in the spring, give the reason why our canal was not ready by the time mentioned in our last report.

The total cost of the work will stand as follows, viz:

Franklin line,	$ 340,363 90
Feeder line, new work,	68,860 12
Engineering, superintendence and all contingencies to this time,	32,595 33
Total cost when finished,	$ 441,455 45
Last years estimate,	442,558 34
Balance,	$ 1,102 89

This balance will be requisite to complete any fencing not yet contracted for, also to add foot-ways upon the lock gates that are yet not completed, &c.

It must be recollected that all money remaining as per centage on abandoned jobs, is embraced in the estimate, therefore should the board of Canal Commissioners direct the payment of this to the contractors, it will in no way interfere with the sum or balance left in the aforementioned calculation.

New work on the old line.

The amount done this year consists in finishing *two waste wiers, one bridge and embankment.* Amount estimated on these jobs this year is one thousand two hundred and thirty-five dollars and ninety-four cents. Amount yet unfurnished in order to complete the bridge, embankment, &c., is three hundred and seventy-five dollars.

All of which is respectfully submitted.

ALONZO LIVERMORE, Engineer.

West Branch Division.

No. 16.

Report of W. F. Packer, Superintendent.

To the Board of Canal Commissioners of Pennsylvania.

GENTLEMEN:—In conformity with the requisitions of the acts of assembly, and in compliance with the instructions of the board of Canal Commissioners, as communicated by their secretary, I beg leave, respectfully, to submit the following

REPORT.

In offering the present communication to the board, it affords me infinite gratification to state that the entire line of canal under my charge has been completed; and that final estimates have been returned from the engineer departments, upon all contracts entered into for the construction of new work upon the West Branch division. The lower division of the Lycoming line, extending from the pool of the Muncy dam to the Loyalsock feeder, was completed and the water admitted into the upper levels about the last of June. On the *fourth of July*, the first boat, "*The James Madison*," ascended the canal and moored at the western bank of Loyalsock creek, since which period the navigation from that point has been uninterrupted, except during a few days of unusual drought, when the water in the creek proved inadequate to supply the levels. It is not, however, anticipated that any scarcity of water will hereafter occur, as the quantity furnished by the feeder dam at Dunnsburg, is abundant; which, aided by the Loyalsock, will in my opinion be amply sufficient for all the purposes of transportation. Should this supposition, nevertheless, be found by experience to be erroneous, the supply may be very considerably augmented by cutting off the water power which at present propels the Loyalsock mills, owned by Tunison Coryell, Esq. The board are aware that the site of Mr. Coryell's mill dam was selected as the most eligible for the erection of a feeder dam, and that he in consequence claims the right of tapping the canal with his race—the level of which being lower than the canal gives him a perpetual head of water, whether there is a sufficiency for the purposes of navigation or not. Privileges so important in their consequences as those asked by Mr. Coryell, and hitherto tacitly allowed, should most certainly only be granted under proper limitations and restrictions. The *vested rights* of individuals, it is true, cannot be held too sacred; when our citizens cease to be protected by government in their *rights of property*, one of the strongest cords in the ligament which bind civil society together will have been severed: but that protection can only be afforded by the legitimate exercise of *sovereign* power. Individual and local interests must yield to the general good; and if damages are thereby sustained, let the party injured be promptly remunerated, and full and ample indemnification made against all pecuniary privations. In this point of view, public policy seems clearly to dictate, that the magnificent works of internal improvement constructed at the expense of the State, should be solely under the control of her public functionaries, free from all associations or partnerships, and not subject to the caprice of any interested individual.

The upper division of the Lycoming line, being in such a state of forwardness as to justify the admission of the water, it was let into the canal, through the guard lock at the feeder dam, above Dunnsburg, on the fifteenth of September; and, although its progress was greatly retarded by the dryness of the season, and the consequent loss of water by soakage and evaporation, the levels have all been filled, and boats laden with merchandize, coal, plaster, &c., have ascended the canal to its junction with the Bald Eagle creek. Thus proving to a demonstration that the supply of water furnished by "*the High dam*," (as the feeder has been significantly termed,) may be relied upon in times of the greatest drought with absolute certainty. The water has seldom, if ever, been known to be lower in the West Branch than it is at the present period, and yet it gives me pleasure to state that there is no scarcity in the canal, and that all apprehension for the future may be dismissed. As the banks become saturated, the loss from filtration and soakage must necessarily be diminished; and an increased supply for canalling purposes will be the inevitable consequence. The feeder dam was completed about the first of January, and judging from the slight effects produced by the ice freshet of last spring, and the floods which have since occurred, no doubt remains in relation to its permanency. About one hundred and twenty feet of the breast plank were taken off by the ice, which was the only injury sustained; and that has since been substantially repaired. The schute, also, fully answers the purpose for which it was intended; and those who were interested in the river trade, and most strenuously opposed to its construction, are now constrained to acknowledge that it can be passed in perfect safety—not the slightest difficulty is experienced. It may not perhaps be amiss to remark that popular opinion relative to the feeder dam and schute has undergone an entire revolution; the manner in which those structures have stood the test of experience, has irresistibly forced even prejudice and error, although deeply rooted, to acknowledge their practicability; and it is with proud satisfaction I can state at this early stage of their practical operations, that a single individual cannot now be found to raise his voice against them.

On the fourth day of July, the water was first admitted into the Bald Eagle side cut; and it has been in constant navigable order since the first of September. The traffic which has already commenced upon it, between the bituminous coal and iron regions of Lycoming and Centre counties, in the transportation of coal to the Bald Eagle, and carrying back iron, pigs, castings, &c. gives an earnest of its future usefulness, and demonstrates that the small amount of funds appropriated to its construction, have been wisely applied. In addition to its importance to the neighborhood, as a great thoroughfare between the coal and iron districts; it confers substantial advantages on the whole line *as a feeder*. The Bald Eagle is a permanent stream, and in dry seasons, when the river fails, there is one half as much water in the former as there is in the latter above its junction. This consideration alone, would have been sufficient to warrant its construction; and any other location of the feeder dam than the one adopted by the board, would have been, if at all practicable, to say the least of it, unwise and injudicious.

The *Lewisburg side-cut* was on the verge of completion, at the date of my last report—the water was let into it in November, and several boats passed through it before navigation was supended by the inclemency of the season. Since the opening of the canal in the spring, transportation upon the side-cut has been without interruption: and an avenue to market, thereby afforded for the immense agricultural production of Buffalo, Penns and Sugar valleys. The luxurient crops of wheat, rye, corn, barley, &c. which are annually produced in the fertile region, drained by the waters of Buffalo and Penns creek, are perhaps unequalled by the same extent of country in Pennsylvania; they are certainly not surpassed. Lewisburg, situated at the junction of Buffalo creek, and the West Branch of the Susquehanna, has always been the natural depot for the surplus products of those valleys, and the precarious navigation of the river, thence to tide water, resorted to as the only out-let to a seaboard market. By the side-cut just completed, a new channel has been opened up, and a choice of markets afforded to the industrious husbandman—while the Commonwealth will be richly compensated by the increase of tolls which will, from this source, necessarily ensue.

The whole length of the *Lycoming line*, including feeder, as stated in my last annual report to the Board, from the point of transit of boats in the pool of the feeder dam, is forty-three miles and two hundred and fifty-eight perches, including two miles and two perches of towing path and slack-water in the pool of the Muncy dam. Upon which there are twelve locks, embracing thirteen lifts, and eighty-two feet of lockage, including one foot of head at the guard lock; averaging 1.87 feet per mile.

The length of the *Bald Eagle side-cut*, including the breadth of the river, is three miles and two hundred and eight perches; embracing eight feet of lockage, which is overcome by one lock near the feeder dam—and the *Lewisburg side-cut* is two hundred perches in length, and has twenty-one feet of lockage; which is overcome by a combined lock of two lifts of eight feet each, and a single lock of five feet lift; making the aggregate length of canal and slack-water completed on this division since my last report, as follows:

	Miles.	*Perches.*
Lycoming line and feeder,	43	258
Bald Eagle side-cut,	3	208
Lewisburg side-cut,		200
Total distance,	48	26

The Board will observe that included in the foregoing are two miles and two perches of slack-water, which may have been heretofore annexed to the finished lines of canal, in summing up the aggregate length completed and in active operation; but as they were attached to the Lycoming line, originally, and constructed out of the funds appropriated to it, I have deemed it proper to report them together.

The following statement exhibits the actual cost of the Lycoming line and feeder, as ascertained by final estimates returned from the engineer department, viz:

Sections of canal and slack-water,	$ 588,144 75½
Aqueducts,	95,703 90
Dams,	85,209 83
Schute at feeder dam,	35,022 77

Locks,	$77,303 01
Public, farm and foot bridges,	55,336 04¼
Towing path bridges,	16,063 72
Fence,	21,026 35½
Culverts,	23,[illegible]43 14
Guard gates,	6,331 50
Lock houses,	5,530 03½
Waste wiers,	3,155 26½
Hydraulic cement,	4,522 01
Removing buildings,	3,501 59½
Castings and wrought iron,	5,389 18½
Cast iron conduit at Williamsport,	545 62½
Wells,	291 51¾
Repairing and strengthening jobs, bridge embankments, &c.	29,316 97
Head gates at Coryell's mill race,	350 00
Work finally suspended by change of location,	27,006 26¾
Water courses,	58 48
Miscellaneous work,	592 30
	$1,083,644 27¼
Deduct State materials,	5,602 28
Total cost of Lycoming line,	$1,078,041 99¼

The following abstract shews the actual cost of the *Bald Eagle side-cut*, as ascertained by final estimates returned from the engineer department, viz:

Sections,	$19,663 36
Locks,	13,648 60
Culverts,	456 66
Waste wiers,	387 71½
Bald Eagle dam and schute,	8,784 97½
Public and farm bridges,	2,250 43
Lock houses,	983 44
Fence,	1,478 83
Castings,	196 00
Total cost of Bald Eagle side-cut,	$47,850 01

Abstract shewing the actual cost of the *Lewisburg side-cut*, as ascertained by final estimates returned from the engineer department, viz:

Canal, dam, lock, culvert and lock house, complete,	$29,739 75
Towing path bridge,	1,707 84
Fence,	382 00
Removal of buildings,	200 00
Total cost of Lewisburg side-cut,	$32,029 59

RECAPITULATION

Showing the entire cost of the NEW WORK upon the West Branch Division:—

Lycoming line and feeder,	$1,078,041	99¼
Bald Eagle side-cut,	47,850	01
Lewisburg side-cut,	32,029	59
	1,157,921	59¼
Engineering, superintendence & incidental expenses,	45,652	18
Total cost,	$1,203,573	77¼
Deduct amount paid,	1,148,209	33¼
Balance unpaid,	$55,364	44
From which, deduct the amount of appropriation for 1834, yet unexpended,	10,422	42¾
Total amount required to complete Lycoming line and Lewisburg and Bald Eagle side-cuts,	$44,942	01¼

The following is a statement of the several appropriations to the Lycoming line, &c., and of the disbursements made:

By the act of March 31st, 1831, there was appropriated to the Lycoming line and Lewisburg side-cut, the sum of $200,000, from which sum a deduction was made at the Treasury, for the payment of interest, of $41,576 14, leaving a balance applicable to construction, of	$158,423	86
There was set apart for this line, out of the appropriations authorized by the act of April 5th, 1832, of $300,000, and the Girard legacy of $300,000, the sum of	229,000	00
By the act of 16th February, 1833, there was appropriated, the sum of	470,007	90
Appropriation for the present year,	301,200	00
Whole amount of available funds appropriated to this line,	$1,158,631	76

DISBURSEMENTS.

Sections,	$552,986	18
Aqueducts and aqueduct sections,	112,305	81
Dams and schutes,	132,877	30½
Locks and lock sections,	112,193	83
Culverts,	22,467	96
Canal and towing-path bridges,	72,524	64½
Fence,	18,665	09
Removals, &c.,	4,389	06½
Miscellaneous work,	36,061	55¾

Lock houses,	$5,545 23½	
Waste wiers,	8,289 07½	
Lewisburg side-cut,	29,246 40	
Engineering, superintendence and incidental expenses,	45,652 18	
Total amount paid,		1,148,209 33¼
Balance of former appropriations on hand,		$10,422 42¾

RECAPITULATION.

Total cost of Lycoming line, Bald Eagle side-cut, and Lewisburg side-cut,	$1,203,573 77¼
Whole amount of appropriations to the above objects,	1,158,631 76
Amount required to complete,	$44,942 01¼

From the foregoing it will be perceived that the amount required beyond the appropriations, to complete the Lycoming line and Bald Eagle and Lewisburg side-cuts, is $44,942 01¼. This apparent discrepance between the *estimate* of last year, and the *actual cost* as now exhibited, can be accounted for very readily, and I hope satisfactorily. In the estimate of the engineers, upon which the last report was predicated, no allowance was made for necessary repairs of jobs which had previously been completed, nor for any new work which might incidentally occur—the allowance of five per cent. which was added upon the balance then required to complete, being barely sufficient to defray the expenses of engineering, superintendence, &c. By a reference to the tabular statements accompanying this report, it will be observed that the work done at repairing and strengthening jobs, gravelling dams, raising bridge embankments and constructing rip raps to protect against the river, amounts to twenty-nine thousand, three hundred and sixteen dollars and ninety-seven cents—that the guard gates at the Blue Rock, near New Liberty, cost four thousand five hundred and twenty-seven dollars—that the bridges and culverts erected across ravines in Muncy town, authorized to be built by a recent resolution of the board, amount to near one thousand dollars—and that the article of iron, cost five thousand three hundred and eighty-nine dollars. The aggregate of these items alone, none of which were included in my last year's report, amounts to more than forty thousand dollars; and there are many others of less amount, to which it is unnecessary here to refer. The repairs which were made, and the new work directed since the last appropriation was granted by the Legislature, were rendered absolutely requisite by the effects of the spring freshets; and a due regard to the interests of the Commonwealth urged their completion, whether there were a sufficiency of funds provided or otherwise.

A detailed statement shewing the amount estimated, per centage retained, and amount paid, during the present year, upon each item of work done upon the Lycoming line, as required by the instructions received through your secretary, will be found among the documents accompanying this report; and also, a statement exhibiting the pay and the amount paid to each officer and agent on this line during the same period; to which the attention of the board in respectfully referred.

By a reference to the documents herewith submitted, you will observe that the amount of damages paid on the West Branch division, upon offers made by the board of Canal Commissioners, and awards of the board of Appraisers, during the current year, is three thousand five hundred and forty-seven dollars and seventy-five cents.

The reports and accompanying tabular statements of James D. Harris and Robert Faries, Esquires, principal engineers on the West Branch division, submitted with this report, exhibit in detail the final estimates on each section and item of incidental work, together with the names of the contractors and the various prices. They also present much statistical information, in relation to the public works upon their respective divisions, which I trust will prove satisfactory.

In the amount required to discharge the final estimates upon the Lycoming line, as exhibited in this report, a sum necessary for the protection of sections No. 9, 31, and lock section No. 4, has not been included; because, the canal being now in constant navigable order, it seemed to me to be an appropriate charge upon the fund for repairs; neither has any allowance been made for engineering, superintendence and contingent expenses from and after this day. Section No. 31 and lock section No. 4, are located near the river, and since the admission of the water, the soakage from the canal has caused the banks to slip between the towing path and the river; thereby rendering its immediate protection an imperative duty. The estimate for the completion of which is five thousand and three hundred dollars. Section No. 9 is somewhat similarly situated, except that the public road passes between the canal and the river; and being near the level of the bottom of the canal has been rendered a quagmire by the soakage; so that the preservation of the road as well as the complete protection of the canal, require that the bank should be well secured with a rip rap or other wall. This work is estimated at eleven hundred dollars. About twelve hundred rods of fence yet remain to be completed, which have not been returned in the final estimates. If the fence should be built during the ensuing summer, an additional sum of twelve hundred dollars will be required. The aggregate of these several items is as follow:

Protecting section No. 31 and lock section No. 4,	$ 5,300
Wall on section No. 9,	1,100
Fence,	1,200
Amount required,	$ 7,600

I cannot conclude this report without turning the attention of the board to a subject so closely identified with the successful issue of the public improvements on the West Branch, as the construction of a towing path as far as slack-water is created by the pool of the feeder dam, at the head of the Lycoming line. The height of the dam above low water mark is eleven feet six inches—which affords a depth of four feet of slack water at the mouth of Queen's run, the commencement of the bituminous coal formation in the Allegheny mountain, four miles from the dam. Extensive arrangements have been made in that vicinity, for the prosecution of an energetic trade in the articles of iron and coal. The Boston company are now erecting all manner of iron manufactories upon Lick run, in sight of their coal mines, and anticipate at no distant day to compete successfully with foreign dealers, if not drive them from our markets. They have in their employ the most skilful of mechanics; and an amount of capital which will enable them fairly to test the experiment. The tolls which will arise from this source alone, would abundantly justify the construction of the proposed towing path—especially as two thirds of the expense has already been incurred in the erection of the dam. That there should be a doubt entertained as to the propriety of completing it without delay, seems to me most singular. One of the primary and leading objects which induced the expenditure of the public money upon the West Branch canal, was the accommodation of the bituminous coal trade; then what good reason can be urged for completing the improvements to a point within five miles of their greatest source of tonnage, create a slack water the remainder of the distance, and debar the public from the use of it by refusing to construct a towing path. Such a course is repugnant to every principle of public policy, and destructive to the individual interests of all who have made investments in the coal region.

The only *new work* now progressing upon the *old line* under my superintendence, is the erection of a weigh-lock at Northumberland; the whole cost of which, including scales and weighing apparatus, is estimated at twelve thousand six hundred dollars, upon which three thousand dollars have been paid, leaving a balance of nine thousand six hundred dollars yet to be provided for, and as the fund applicable to this work is entirely exhausted, an early appropriation is required.

In compliance with a resolution of the board of canal commissioners, George Eckert of Milton, Northumberland county, was permitted to take water from the canal for milling purposes on the 20th of September last; for which he is bound to pay to the Commonwealth the sum of one hundred and twenty-five dollars per annum. The quantity drawn from the canal is four feet in width and four inches in heighth, taken from the surface.

All of which is respectfully submitted.

WILLIAM F. PACKER,
Sup't West Branch div. Penn'a canal.

CANAL OFFICE, Williamsport,
November 1, 1834.

No. 17.

Report of J. D. Harris, Engineer.

Canal Office, Jersey Shore,
October 30th, 1834.

To William F. Packer.
Superintendent of the West Branch Division Penn. Canal,

Sir—In obedience to the directions of the Board of Canal Commissioners, as communicated in the letter of their Secretary, dated the 9th inst. I herewith transmit to you the tabular statements exhibiting the details of my annual report, in relation to the upper division of the Lycoming line.

In complying with the usual requisitions of the Board, at the close of the year, it gives me pleasure to congratulate you, and all friends to the success of this branch of the State improvements, on the completion of the whole line to its junction with the Bald Eagle creek. And although this event, so long looked forward to as an epoch in the history of this portion of the State, has not transpired so early by about one month as was hoped and expected at the date of my last annual report, yet the work has been consummated in time to admit of the passage of the water throughout the whole length of the line before the setting in of winter, and to afford an opportunity to make such test of the work as justifies the belief that the exertions on the part of the State agents to construct the work in a permanent manner, have not been misdirected.

The water was first admitted into the Bald Eagle side-cut on the 4th of July. It has been in constant navigable order since the first of September, and it already begins to give evidence of its importance to the neighborhood, in the traffic which has been commenced between the coal mines and the Bald Eagle valley, chiefly in the transportation of coal to the Bald Eagle, and in carrying back iron, pigs, castings, lime, agricultural products and merchandize.

The water was admitted into the canal through the guard lock at the feeder dam, on the 1[illegible]th of September. Owing to the dryness of the weather, when the water was first admitted, and its continued dryness up to the present time, the process of filling the canal has been tedious. The quantity of water let in has been governed by a due regard to the safety of the banks; and it was thought better to submit to censure for over-caution in admitting the water, than to incur the risk of breaches, by letting in a full supply at once. The water has therefore been admitted so gradually, that all defects in the banks might be detected and secured before filling the levels. The supply of water drawn from the feeder dam has been gradually increased, and in such ratio as appeared safe under existing circumstances. The depth of water admitted into the canal at the guard lock is now four feet eight inches, which is passed principally through the paddle-gates. It is proposed to increase the depth in a few days to five feet, by opening the large gates of the lock. It may not be improper here to remark, that the average capacity of this canal considerably exceeds that of the Pennsylvania canal generally. In all cases where it could be done without much additional expense, it has been widened beyond the ordinary breadth. A great portion of this canal is forty-six feet in breadth at water line, instead of forty, the usual breadth. This fact is stated in order to give some idea of the quantity of water required to fill a canal of this dimension, as compared with others of less capacity.

Subsequently to the date of my last annual report, the feeder dam of the Lycoming line has been completed; and judging from the slight effects produced by the floods which have taken place since its completion, there is no reason to apprehend that the advocates of this structure will be disappointed in relation to its permanency. With regard to the schute of the feeder dam, its loudest opposers are obliged to acknowledge that it is as safe as any other part of the river. The dam and schute were completed in the month of December last.

Whilst speaking of schutes, it may not be irrelevant to state that from observations made, the conclusion has been formed that the following requisites are essential in the construction of a permanently safe schute, where the dam is of considerable height, viz:

First. That the bottom of the river at the tail of the schute consist of a solid rock, or artificial foundation, which cannot be disturbed by the action of the water; and that this bottom extend for a distance of from two hundred to five hundred feet below the termination of the schute, in proportion to the height of the dam.

Secondly. That the schute have a sufficient length in proportion to the height of the dam—the length of the schute increasing in a geometrical ratio with the direct increased height of the dam.

Thirdly. That no greater depth of water be admitted at the head than is barely sufficient to carry the craft through at the lowest flood suitable for craft to run in the river.

Those appear to be the chief and leading objects to be attended to in those erections, and are stated as the result of much reflection on the subject, in the hope that they may afford some small degree of aid in the construction of such works.

During the winter, ice had formed on the pool of the feeder dam, of about ten inches in thickness, and on the river generally, of sufficient thickness to admit of the crossing of wagons upon it. In the month of January this ice went off with a freshet, which rose generally ten to eleven feet above low water mark. No damage was done by this freshet to any part of the work, except that of taking off about one hundred and twenty feet of the breast plank of the feeder dam. This part of the breast has since been renewed, together with the lower range timbers, which parted and went off with the breast plank, and the whole has been more thoroughly secured by means of strong iron bridles, and by bolting the whole of the breast plank to the range timbers, with iron bolts one inch square. The quantity of iron alone for this addition and repair, amounts to fourteen thousand, three hundred and fourteen pounds. The breast plank consists of a double course of five inches thick, oak and hemlock. The troughing below the dam has not progressed so far as to render any additional crib work necessary for its security as yet. It seems, probable, however, that a course of crib work on the plan recommended in my report of last year will be required at a future day.

The waters of the river having fallen during the latter part of the summer to a very low stage, proved the necessity of an additional course of gravelling, to keep up the water to a sufficient height in the pool of the feeder dam, to afford a supply for the canal and for the preservation of the timber work of the dam. The waters, in the month of August, had fallen to the depth of two feet below bottom of canal in the pool of the dam, or seven feet three inches below the comb of the dam. The work of gravelling having been thrown open to all who might deliver gravel at the price fixed, and measured in the flats, a sufficient number were at once engaged, and the work was speedily completed, so as to raise the water fairly over the comb, at the same time affording a supply for the canal, without any material aid from the Bald Eagle. A small expenditure may be required yearly for some time in tightening the dam. By judicious management it may be kept full at all times, more especially if the supply which may be obtained from the Bald Eagle is resorted to. The quantity of gravel put into the dam this season, is twelve thousand four hundred and ninety-six yards.—Before the gravelling was commenced the stone filling of the dam for the depth of about fifteen inches, was broken after the fashion of turnpike work, so as to render it as compact as possible, and in order that it might hold the gravel filling placed on the top of it.

Considerable repairs have also been made to the schute during the past season, rendered necessary by the effects of the spring freshets. A quantity of stone filling was put in to secure the foundations of the side walls, and in order to level and smoothen the bottom. The head of the schute was paved, and a frame constructed for the purpose of shutting the water out of the schute at a dry time. The shore wall of the schute was extended three hundred and thirty feet at the tail, and carried up to a height corresponding with the adjoining wall.

The whole of those additions and repairs at the dam and schute, amount to the sum of nine thousand, eight hundred and eleven dollars and fifty-one and a half cents.

The tabular statements accompanying this report are intended to show, so far as practicable within the limits of the tables—Firstly, the amount of each item of work, excavation, embankment, &c., on each job, together with the actual cost of each: Secondly, the actual total cost of the work done under each general head, sections, aqueducts, &c., and lastly, the total cost of the whole work on the upper division of the Lycoming line, including the feeder and Bald Eagle side cuts.

The total cost of the whole work, as will appear from the general abstract statement, amounts to		$811,332 97½
By referring to the report of last year, it will appear that the gross amount of the estimate for completion was	$869,168 74¾	
From this deduct the estimated cost of a towing path bridge at the feeder dam, an outlet lock at Reed's run, and a guard lock at the Blue Rock, submitted for the decision of the board and deducted,	$38,000 00	$831,168 74¾
Surplus applicable to the payment of engineering and office expenses,		19,835 77½
The total cost of the upper division of the Lycoming line, including the feeder, as per my present report, is		$764,056 19¾
Work done not included in the estimate of last year, viz:		
Guard gate at Blue Rock,	$4,527 05	
Bridge at Muncy town (Hanna's,)	495 35	
Culverts " "	449 61	
Repairs and additions to dam and schute,	9,811 51½	
" sects. 47, 48, 49, Rip Rap, &c. to protect against the river,	1,739 02	17,022 54½
Total cost of work estimated last year on the upper division of the Lycoming line and feeder,		$747,033 65¼
The total cost of Bald Eagle side-cut as per my present report, is		$47,276 77½
Work done not included in estimate of last year, viz:		
Lock house at Bald Eagle guard lock,	$511 98	
Shore wall below schute (Bald Eagle dam,)	837 85	
Waste wier on section No. 2,	387 71½	1,737 54½
Total cost of work estimated last year on Bald Eagle side-cut,		45,539 23
Amount upper division, &c. brought over,		747,033 65¼
Amount,		792,572 88¼
	$869,168 74¾	
	38,000 00	
Total estimates of same work,		831,168 74¾
Surplus,		$38,595 86½

The work embraced in the tabular statements shewing the cost of the line, does not include the sum necessary for the protection of sec. No. 31 and lock sec. No. 4 from the encroachments of the river. The canal at this place is located so as to leave a strip of land between the canal and the river, sufficient for the protection of the canal at the present time. Under this belief, and the knowledge that this part of the line could be protected more cheaply after the admission of the water than during the construction of the other work of the sections, this part of the river bank about thirty-five chains was left in its original shape. Since letting in the water, the soakage from the canal has caused the bank to slip between the towing path and the river, and its immediate protection is advisable. The protection should consist of a rip rap wall, the stone for which can be procured at the rock sections two and one-half miles higher up the river, close to the bank of the canal. The estimate for the completion of this protection in a permanent manner, is as follows:

Excavation,	slope,	5,000	10	$ 500
Rip rap,		12,000	40	4,800
				$ 5,300

A similar protection on section No. 9, would also in my opinion be a judicious work. At this place there is barely room for the main road between the canal and the river. The soakage from the canal has converted the road into a quagmire and both the preservation of the road, and the complete protection of the canal seem to require that the bank should be secured with a rip rap, or other wall. The estimate for this is as follows:

Excavation	slope,	1,000	10,	$ 100
Rip rap,		2,000	50,	1,000
				$ 1,100

About twelve hundred rods of fence yet remain to be made in order to place the land holders throughout the line on the same footing in this particular. They have themselves held the contracts for making the fence, but as it was not made it was not included in the statements shewing the cost of the work. This fence if made will amount at one dollar per rod to twelve hundred dollars.

Very respectfully your obedient servant,
JAMES D. HARRIS,
Engineer, upper division, Lycoming line.

No. 18.

Report of R. Faries, Engineer.

To William F. Packer, Esq.
Sup't of the West Branch Canal.

Sir:—To enable you to report the transactions upon your line, to the board of Canal Commissioners, for the year ending the 31st October 1834—the following information is respectfully furnished.—It comprises all that is required from the engineer department, in relation to the old line and the lower division of the Lycoming.

The lower division of the Lycoming line commences at a point thirty-two perches west of the Lycoming creek, and terminates in the pool of the Muncy dam, two miles and two perches below the out-let locks. Fifteen miles and one hundred and fifty-two perches of it is a canal, the residue is a towing path formed along the pool. From the point of intersection with the "upper division," to Lock No. 5, the distance is seventy-seven perches. The ground passed over, presented serious difficulties; embankments had to be raised varying in height from five to twenty-three feet, and an aqueduct built four hundred and twenty-two feet in length, including the wing walls; the abutments and piers of the aqueduct are faced with lime-stone neatly dressed and laid in regular courses; the superstructure is straight stringers with balance beams and under braces; there are seven spaces for the water of the creek to pass through, forty-two feet in the clear, each.

The level commencing at lock No. 5, passes through the town of Williamsport, and terminates at lock No. 6, on the west bank of Loyalsock creek. It is five miles and one hundred and thirteen perches in length; five small streams are crossed with stone culverts, the aggregate of their spans is thirty-six feet. A cast iron pipe passes under the canal to drain a part of the town, its calibre is sixteen inches; nine farm and five public bridges have been built over this level.

The Loyalsock is taken in as a feeder. Heavy embankments are carried over the low ground in the vicinity of the creek, and two dams built; one across the main channel, four hundred feet in length, the other across a branch one hundred and four feet. At the branch a towing path bridge is built upon bents, the superstructure is one hundred and fifty feet in length.—The "Mitchell bridge," crosses the main channel, the abutments and piers are limestone, dressed, and laid in courses; the space between the abutments is three hundred and four feet in the clear, which is subdivided into three spans, two of eighty feet and one (the centre span) of one hundred and twenty feet chord. The plan of the superstructure is a combination of the permanent bridge at Philadelphia, and of Pope's lever bridge; the floor rises in its whole length four feet six inches, it is effectually cualked and well pitched so as to protect the under work from the weather, the smaller spans have versed sines of six feet, the larger has a versed sine of nine feet.

Taking the superstructure in connection with the wing wall, the whole length of the bridge will be four hundred and thirty-four feet. From the creek to lock No. 7, ordinary ground is passed over, the distance between lock No. 6, and lock No. 7, one hundred and eighty-six perches, it has but one public bridge.

Lock No. 7, answers the purpose both of a guard and lift lock, continuing on, the canal passes over favorable ground until it approaches the east line of John Andrew Shulze's farm, at which place a heavy embankment is raised across a channel of the river, from whence the towing path is carried along on "Spring island," until it arrives within a few rods of lock No. 8, where the first land is again resumed; upon this level four bridges occur, two with abutments alone, one with abutments and one pier, and one with abutments and two piers, length of level two miles one hundred and twenty-eight perches.

Pursuing the bottom land the ground was remarkably favorable for a canal, but one six foot culvert occurs until "Armour's run" is reached, where another of similar chord is built. After crossing the run, embankments had to be raised for nearly a thousand feet, from eight to twenty-three feet high; and within a few hundred feet, again, embankments had to be raised twenty-three feet in height and nearly four hundred feet in length, and a culvert of twelve feet chord built over "Carpenter's run;" the canal then continues along a side hill and through deep cutting until it reaches Lock No. 9—this level has also a culvert under it of six feet chord, to convey water to the mill of Robert C. Hall, and one public and six farm bridges crosses it. It is three miles and three hundred and eight perches in length. A basin twelve rods long is formed between locks No. 9 and 10.

Immediately after leaving Lock No. 10, "Hall's Bluffs" set in, and are passed by a wall and embankment fifteen hundred and one feet in length and twenty-two feet high above the water of the river.

At the lower end of the "Bluffs," the Muncy falls commence, where every facility for a cheap canal was afforded until the creek had to be crossed; here difficulties beyond what was at first anticipated had to be encountered. On the west side of the creek the rock made its appearance, and it was confidently believed that it could be got at to found the abutments and piers for an aqueduct the whole distance across; this idea, however, proved fallacious, for after several unsuccessful attempts to get to the rock on the east side, that abutment and the pier next it had to be founded upon cribs, they are well secured with heavy rip-rap, and a crib sunk immediately below filled with heavy stone.

The distance between the face of the abutments is one hundred and ninety feet sub-divided into four spans of forty feet, each, in the clear, the remaining part of the space is occupied by the piers. Notwithstanding the unforeseen difficulties the water was passedw ithin a few days of the time contemplated in my last year's report.

The flat below Muncy creek is considerably depressed below the level of the canal, it is crossed by heavy embankments and a twelve feet culvert at "Glade run," upon which immediate relief is had, and the ground continues favorable until the canal arrives at Lock No. 11. Length of level two miles, two hundred and twenty-four perches, upon which there are three public and two farm bridges, there is also a four feet culvert under this level that drains a piece of low ground lying behind the borough of Muncy.

Between Lock No. 11 and No. 12, (the out-lets) a large basin is formed sixty-four rods long, with an aggregate width of eighty feet. Boats may safely moore in this basin at such times as the river may be too high to venture into the pool of the dam.

The remainder of the distance of the lower division, two miles and two perches is towing path, formed partly along a slate bluff, and partly on the alluvial bank.

The tables show the amount of work done upon each section, and upon each item of incidental work together with the names of the contractors.

The aggregate of the cost is as follows, viz:

For Sections,	147,182 03¼
Dams,	14,684 12
Aqueducts,	30,328 66
Locks,	38,115 51
Public and farm bridges,	19,056 28
Towing path bridges,	16,063 72
Culverts,	10,432 61
Waste wiers,	1,951 36½
Lock Houses,	3,074 71
Miscellaneous work,	24,214 65¼
Fence,	8,955 37
	$314,059 03
Amount required to complete, for fence, etc.,	500 00
Total cost,	$314,559 03

The lockage in the whole distance is fifty-six feet, divided into nine lifts, viz: Lock No. 5, has a lift of four feet, No. 6, seven feet, No. 7, five feet, No. 8, six feet, No. 9, six feet No. 10, six feet, No. 11, six feet and No. 12, two eight feet lifts combined.

On the fourth of July, the first boat navigated the canal as high up as the Loyalsock, since which time that portion of the canal has been in good order, with the exception of a short period when the water in the creek was too low to feed, and it is gratifying to have it in my power to say, that no breach has occurred.

The remainder of the lower division will be fit for use in a few days; the water from above has already passed this place.

When I submitted you my report of 1833, the Lewisburg cross-cut was so near being completed, that the water, had been introduced. It has also been fortunate, in not having any breaches.

The whole cost is as follows, viz:

Cost of work done by William Cameron, on canal, locks and dam, &c.,	$29,739 75
Cost of work done by James Lee, on towing-path bridge and embankment,	1,707 84
Cost of fence made by Abbot Green,	382 00
Cost of removing buildings by Rebecca Steadman,	200 00
Total cost,	$32,029 59

Upon the old line, the only work put under contract, except such as was done by the supervisor during the past season, was the weigh lock at Northumberland.

The amount estimated for work done, is	$3,100 00
The amount required to complete, including buildings,	9,500 00
Total cost,	$12,600 00

The estimate made last year, was for a lock of wood and stone combined; the lock now being built, is of cut stone; one foot of the bed and joints of the ashler, is laid in "Roman cement;" the residue of the walls is grouted with a cement manufactured from a substance taken from "Laries bluffs," on the West Branch. The superiority of the work, when completed, will fully justify the increased expense.

By a resolution of the board of Canal Commissioners, in compliance with an act of the Legislature of last session, George Eckert of Milton, in the county of Northumberland, was permitted to take water from the canal for milling purposes, for which he is to pay the sum of one hundred and twenty-five dollars per annum, for four inches of water, four feet in width, drawn from the surface.

On the 20th of September last, the water was first introduced into his mill race; since which time, the mill has been supplied from the canal, with the quantity of water heretofore specified.

ROBERT FARIES, *Engineer,*
Northumberland & Lower division, of the Lycoming line.

WILLIAMSPORT, October 29 1834.

North Branch and Susquehanna Divisions.

No. 19.

Report of Lord Butler, late Superintendent.

Canal Office, Wilkesbarre,
November 1, 1834.

To the Board of Canal Commmissioners:

Gentlemen;—In presenting to you these tables, which are calculated to show the full amount of moneys paid for work upon the Wyoming canal, and the amounts yet due, I have merely to remark that this line was filled with water on the 25th of June last, in about two days after admitting the water, without the occurrence of the slightest difficulty.

The amount of money here exhibited as being due upon said canal, is fully in accordance with the final and other estimates of the engineer, as given to me; the causes that led to the excess over the estimate of October last, are not known to me.

I forward to you, also, tables that relate to the expenditures upon the North Branch and Susquehanna old lines, for work upon canal, and for damages.

I remain yours most respectfully,
L. BUTLER,
Late Superintendent of the North Branch canal.

No. 20.

Report of D. M'Cormick, Superintendent.

To the Board of Canal Commissioners:

Gentlemen:—On the 1st of September, I was appointed superintendent on the North Branch and Wyoming lines of canal. At that time, the funds for work on the Wyoming line were exhausted. On the North Branch, there is still an unexpended balance for old work, out of which I have drawn $500 00

Amount paid out to John Nixon, for fencing,	$109 50	
Joseph Nours, do.,	337 50	
Paid D. M'Cormick, for services, up to 1st November, 1834,	30 50	
		477 50
Balance due Commonwealth,		$22 50

I have drawn from the Treasury, out of the damage fund,			$1000 00
And paid Thomas Slocum	damage,	$40 00	
" Solomon Brown,	"	30 00	
" Thomas Burmingham,	"	100 00	
" Abraham Meuch,	"	400 00	
" do.	for lock-house lot,	50 00	
			620 00
Balance due Commonwealth,			$380 00

Very respectfully yours, &c.
D. M'CORMICK, Superd't.
Nov. 1st, 1834.

I have made no payments on the Susquehanna division.

☞ For Report of Engineer on Susquehanna division, see page 73.

* * *

No. 21.

Report of Robert Faries, Engineer.

To David M'Cormick, Esq.
Superintendent of the North Branch Canal.

Sir:—The transactions relative to the completion of the Wyoming line of the Pennsylvania canal, occurred previously to the 11th August last, the time at which that line came under my charge. My predecessor, John Bennet, Esq. has furnished Lord Butler, Esq. the former superintendent, all the information necessary from the engineer department; by referring to it, you will be enabled to submit to the board of Canal Commissioners, the facts required by them for their report to the Legislature for the year ending the 30th October, 1834.

During the whole time since the 11th August, it has been in fine navigable order, and unquestionably reflects much credit upon the persons under whose direction the work was completed.

The North Branch division, or old line, is now in perfect order. The repairs done to the Nanticoke dam, during the past season, are of such a nature as to insure a full supply of water at the head during the driest times; the only difficulty now to be apprehended, is in getting a sufficient quantity of water passed through the upper level to feed the line to Northumberland—this evil, however, may easily be remedied. The chamber of the guard lock is the same in width as the lift locks, seventeen feet; beside which, several stop or safety gates are placed on that level, to secure the canal from the floods of the river; these obstructions evidently retard the progress of the water, whereby an insufficient quantity is passed to the lower levels. It will therefore be proper that you recommend, in your report to the board, the construction of a guard lock of cut stone, at the head, and that the present lock be substituted as a feeder, and also that water-ways be made around the different stop or safety gates, so as to increase the sectional area at those points. To cover this expense and secure the entrance at the head more effectually, the sum of thirty thousand dollars will be required. By incurring this expense, the utmost confidence may be placed in the efficiency of the North Branch river as a feeder.

Any other work essential to be done next season, will come under the control of the different supervisors. It may not, however, be amiss to draw the attention of the board to the state of the different lift locks upon this line—they are fast going to delapidation, and it might be prudent to provide materials to replace them, whilst every facility is afforded by the improvement, otherwise the expense will be considerably increased.

Respectfully,
ROB'T FARIES, *Engineer*
Of the N. Branch and Wyoming lines of the Pa. canal.

CANAL OFFICE, Nov. 10, 1834.

* * *

No. 22.

Report of Simpson Torbert, Superintendent.

PENNSYLVANIA CANAL, DELAWARE DIVISION,
Superintendent's Office, Nov. 1, 1834.

To the board of Canal Commissioners:

GENTLEMEN:—Agreeably to your instructions, I respectfully submit the following report:

The amount disbursed since the 1st of November last, out of the fund applicable to "*new work on old lines,*" is as follows, viz:

Paid John Cole, for weigh-lock scales, (contract,)	$3000 00
Samuel Innis, printing,	4 00
John Forsman, late supervisor, on account of work at Durham creek feeder,	480 10
George Trauger, timber for safety gates,	75 52
Nicholas Lambert, for do.	113 32
John Fitzinger, fixtures for water-way at Easton guard-lock,	49 84
George Straub, for work at lock-house,	86 36
Abraham Trauger, timber for safety gates,	79 05
Sundry persons, for labor and materials for house at Bristol tide lock,	178 69½
Joseph Hough & Co. Smithville feeder and water ways at locks, (contract,)	860 75

Paid, Long & Law, weigh lock at Easton, house and offices, building culvert, slope and vertical walls, &c. (contract,)	$11,249	44
“ Benjamin Eyres & Co., cross cut to river, and waste wier on sec. 45 to vent Neely's creek, (contract,)	2,328	85
“ John Carey, Jr. late supervisor, on account of work at Durham creek feeder,	236	40
“ Wm. Hall, for building safety gates, (contract)	575	00
“ J. P. Hetrick, printing,	7	50
“ James M. Porter, attorney at law, for professional services,	100	00
“ John L. Johnson, for making bridge embankment,	53	75
“ Thomas Betts, for fencing, (contract,)	84	68
“ Simpson Torbert, services as superintendent from the 1st day of October, 1833, until the 30th September, 1834, at 50 cents per day,	182	50
Making in all,	$19,545	75½

Damage claims have been paid to the following named persons, viz:

Cornelius Slack,	$100	00	Award of appraisers.
Howell and Williamson,	200	00	“ “
John L. Johnson,	250	00	“ “
George Clymer,	100	00	“ “
Benjamin Reigle,	50	00	“ “
John Leidy,	100	00	“ “
James M. Porter,	25	00	Offer of canal comm'rs.
Robert Stewart's heirs,	100	00	“ “
Abraham Bougher,	25	00	“ “
Joshua C. Canby,	50	00	Award of appraisers.
Wm. Paff,	15	00	Offer of canal comm'rs.
Samuel Cooper,	20	00	“ “
Robert T. Neely,	400	00	“ “
Joseph Warner,	1,600	00	Award of appraisers.
John Briggs,	100	00	“ “
Chalkley Albertson,	50	00	“ “
Banner Knowles,	100	00	“ “
David Balderson,	175	00	“ “
Robert Butler,	5	00	“ “
Cyrus & Albert Smith,	100	00	“ “
George Meldrum,	35	00	“ “
Michael Seip,	50	00	“ “
Wm. Duer's estate,	200	00	“ “
John Beaumont,	1,100	00	“ “
Joseph Stackhouse,	25	00	“ “
A. H. Barthol,	50	00	“ “

John Grover,	94 00	Award of appraisers.
James Van Hart,	56 00	" "
Nathan Riley,	20 00	" "
Mary Clymer,	100 00	Offer of canal comm'rs.
" "	20 00	" "
Isaac Hicks,	30 00	Award of appraisers.
Paid sundry persons out of damage fund for recording deeds, printing blanks, advertising, &c.	18 13¾	
	$5,363 13¾	
Add to this the amount disbursed out of the "*new work*" fund, viz:	19,545 75½	
Am't of disbursements,	$24,908 89¼	

The whole cost of this division, including damage, up to the 31st October, 1833, was	$1,346,387 53
Amount expended the present year for new work and damage,	24,908 89¼
Whole cost,	$1,371,296 42¼

Of the fund applicable to the construction of "*new work on old lines,*" there yet remains a balance in my hands of four hundred and ninety-two dollars and seventy-seven cents. Here permit me to submit a few remarks on the subject of further expenditures. There has been a great want of room at Bristol the past season for depositing coal and other articles transported on the canal; it has therefore been suggested that the Commonwealth should make an additional wharf, fronting one hundred and ninety-seven feet on *Summer's lot;* and running from thence towards the river pier to the distance of one hundred and thirty-eight feet, leaving a passage for boats between it and the proposed new wharf. Here also would be an excellent location for a store-house for the accommodation of the canal trade. These improvements, if made, would yield the Commonwealth annually two hundred and fifty dollars.

The cost of the wharf would be say about	$1,400 00
store house,	600 00
There will yet be required for the purchase of lock house lots, &c. say	1,400 00
For fencing,	150 00

King & Livingston have made a claim against the Commonwealth for the patent right of seventy-nine cast iron paddle gates, at $7 00 per gate,	553 00
Whole amount,	$4,103 00
Deduct balance on hand,	492 77
Amount yet required,	$3,610 23

Perhaps it may not be improper here to remark, that many of the bridges are in bad *condition*—some of which require re-building, and others extensive repairs. At present it seems to be undecided whether the Commonwealth is to keep them up; and while this is the case, it will be a constant source of public inconvenience and complaint.—Viewing the equity of the matter, it appears to be but fair to infer that the Commonwealth is *morally bound* to maintain the bridges, inasmuch as she has created the necessity for their erection.

This "*line*" has been in remarkably fine order the whole of the past season; and the work generally appears to have assumed a character of permanence and stability. The only difficulty which is now felt, is the want of an adequate supply of water, south of New-Hope, during the dry season of the year. This difficulty might very readily be obviated by the erection of a low dam in the river at that place, so as at all times to furnish an ample supply of water. A negotiation is now pending between Pennsylvania and New-Jersey, in relation to the navigation and use of the waters of the Delaware; which it is hoped will result in an arrangement beneficial to the interests of both States.

Frequent applications are made for the privilege of erecting hydraulic works at the locks. This could be done at such places, without abstracting any water from the canal, or interfering in the smallest degree with the navigation. The grant of these privileges would be of great advantage to many neighborhoods, and ultimately become a source of considerable revenue to the Commonwealth.

In conclusion, I will merely remark, that the future prospects of this division are of the most cheering character; in a very short period, there is every probability that its trade will be greatly augmented. The extensive improvements which are now in progress and in contemplation between the Lehigh and Susquehanna—the inexhaustible sources of wealth, increasing prosperity and never-ending wants of the country—all justify the anticipation that this portion of the "*public works*" is destined, *ere long*, to yield a rich and bountiful harvest.

All of which is respectfully submitted.

SIMPSON TORBERT, *Super'd't.*

☞ For report of the Engineer on the Delaware division, see page 3.